Centers for Medicare and Medicaid Services (CMS) Health Technology Ecosystem File Code CMS-0042-NC

Request for Information

June 2025

Contents

Executive Summary

Ab Initio Software LLC is delighted to respond to the Department of Health and Human Services (HHS) - Centers for Medicare & Medicaid Services (CMS) Health Technology Ecosystem RFI CMS-0042-NC.

Ab Initio software is a universal platform for enterprise-scale data processing, data quality, and data governance.

In particular, we have extensive experience in healthcare and at large government agencies. We invite you to read the customer stories later in this document, which will show the variety of important healthcare challenges for which our software has been used with positive quantifiable outcomes.

Key components of our technology and our company that we believe will be of interest to CMS include:

- **Scalability** – There is no limit to the amount of data Ab Initio can process, both in batch and real-time.
- **Platform agnosticism** – We can run anywhere – on premises, in the cloud, or in hybrid environments.
- **Integrated platform** – We provide a single, integrated platform designed from the beginning to solve the toughest data processing and data management problems of the world's largest companies, in real-time.
- **Universal connectivity** – We can connect to virtually any data source and with any published API.
- **Partnerships and teaming** – Ab Initio will team with partners that will augment our capabilities if needed. Ab Initio views partners and integrators as a force multiplier, especially in the Federal and Healthcare spaces. We are accustomed to working with large integrators (e.g., CACI, Peraton, etc.), hyperscalers (e.g., AWS, Azure, GCP, and Oracle) and clinical organizations (e.g., BCBS Federal Employee Program, BCBS South Carolina, CareFirst, etc.) within our Federal and Healthcare practices. In many cases, customers ask us to work with their providers to deliver solutions. We also work with smaller boutique partners with domain-specific expertise.
- **Support** – Our support team is widely regarded as the best in the industry.

Because Ab Initio has always been a single, integrated metadata-driven system, we have the richest set of consistent metadata available to provide the context for an LLM. Our AI Assistant uses everything from business terms linked to physical data, governance policies and controls, DQ results, live data access, profiles, operational metadata, lineage, help text, and knowledge graphs when it generates applications, configures rules with natural-language voice commands, simplifies data quality, and performs steward tasks. For more information about us, see the section "About Ab Initio."

In the section "Our Understanding of the Problem and Our Approach," we summarize the RFI's key use cases in each area and then provide Ab Initio's capabilities – such as data integration, metadata management, data exchange, governance, identity assurance, and API enablement – aligned with these use cases and CMS's mission.

The Ab Initio approach and solution are driven by our key tenets in healthcare:

- Empowering beneficiaries to make informed health decisions
- Reducing administrative burdens while improving quality care
- Leveraging FHIR standards for seamless interoperability and ensuring data quality and accuracy
- Supporting value-based care transformation
- Improving healthcare outcomes based on advanced AI capabilities

As noted in the RFI directions, Ab Initio is responding only to the questions where we have useful opinions or relevant experience.

Ab Initio will be happy to demo our software at any time; in addition, we are prepared to participate in a Proof of Concept, at no charge to CMS. We recognize that it's easy for a vendor to claim that it can meet evaluation criteria in responding to an RFI; it can be much more challenging to demonstrate that it can actually meet those criteria using real data, in a real customer environment.

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About Ab Initio

Ab Initio (meaning “from first principles”) is a global software company headquartered in Lexington, Massachusetts. For more than 30 years, Ab Initio has worked with the largest and most sophisticated organizations across verticals such as Healthcare, Government, Telecom, Retail, Financial Services, High-Tech, Transportation, and Manufacturing, among others, to assure their business success.

We do not acquire other companies or other technologies, which sets us apart from other software companies. All Ab Initio products are created by Ab Initio developers at our headquarters in Lexington, Massachusetts, ensuring complete integration across our product suite.

Ab Initio’s software provides a universal platform for enterprise-scale data governance and data processing. Our goal has always been to build the world’s best software that can solve the toughest data processing and data management challenges that large organizations encounter.

To do this, we’ve constructed a completely integrated platform that is agile and robust, that scales, that employs automation, that works simultaneously with both the most recent and legacy technologies, that solves end-to-end processing and integration challenges, and that drives down total cost of ownership.

Our field consultants and strategic consultants are simply the best in the business, combining both wide and deep knowledge of relevant technologies with long experience in each of our customer verticals.

We offer unparalleled support for our software. Many of our technical support personnel, called Internal Consultants, have PhDs in Computer Science, Math, Physics, and related fields. And they all do whatever it takes to make our customers successful.

Ab Initio Software has been recognized by Gartner® as a Leader in the December 2024 Magic Quadrant™ for Data Integration Tools and scores within the five highest-scoring vendors for all the evaluated use cases in the December 2024 Gartner® Critical Capabilities for Data Integration Report.

Not only does Ab Initio provide superior technology, but we also provide world-class customer service. Of all vendors recognized as a leader in the 2024 Gartner® Magic Quadrant™ for Data Integration Tools, Ab Initio Software is the highest-rated Gartner Peer Insights™ Data Integration Tools vendor. Customers told Gartner® the following:

“Functionally rich, reliable, data integration software, with excellent technical support.”

“Metadata environment is truly developed to support metadata management in the organization. Product concept is very close to our organization’s metadata management vision.”

“#1 The field consultants and support are exceptional. You got a problem, you get an answer.”

“Quality of product is amazing. Vendor provides continued support for all versions. New features being developed and introduced all the time.”

“Reliable solution also for complex challenges. Great partner who you can trust. Always good quality.”

“In my experience, you can address every data integration challenge with Ab Initio. Also, the documentation and the support are very helpful and responsive.”

For more reviews, see: https://www.gartner.com/reviews/market/data-integration-tools/vendor/ab-initio/product/ab-initio/reviews.

Our Understanding of the Problem and Our Approach

The Centers for Medicare & Medicaid Services (CMS) issued a Health Technology Ecosystem Request for Information (RFI) in May 2025. Through the RFI, CMS is seeking public input on how to advance digital health tools and data interoperability for Medicare beneficiaries.

The RFI is organized by stakeholder groups – patients/caregivers, providers, payers, technology vendors/networks, and value-based care organizations – and poses questions about improving health data access, exchange, and innovation.

CMS is emphasizing goals like empowering patients with their health information, reducing provider burden in data sharing, fostering a robust ecosystem of health IT developers, and implementing digital identity solutions for secure access.

In addition to the RFI, Ab Initio has a keen understanding of HHS's 2024-2030 Federal Health IT Strategic Plan, which focuses on the following, and has helped guide our response to the RFI:

- Promote health and wellness through prevention
- Enhance core delivery and patient experience
- Accelerate research and innovation
- Connect heath systems with integrated data

The Ab Initio response will focus on the following sections:

- **Section B: Patients and Caregivers** – Focusing on data access and integration use cases
- **Section C: Providers** – Focusing on data exchange and digital identity use cases
- **Section E: Technology Vendors, Data Providers, and Networks** – Focusing on ecosystem development, digital identity, and data exchange use cases

For each area, we summarize the RFI's key use cases and then provide Ab Initio's capabilities – such as data integration, metadata management, data exchange, governance, identity assurance, and API enablement – aligned with these use cases. And again, Ab Initio's approach and solution are driven by our key tenets in healthcare:

- Empowering beneficiaries to make informed health decisions
- Reducing administrative burdens while improving quality care
- Leveraging FHIR standards for seamless interoperability and ensuring data quality and accuracy
- Supporting value-based care transformation
- Improving healthcare outcomes

The following sections summarize Ab Initio's support for Sections B, C and E. Sections later in this document answer the specific questions for Sections B, C, and E.

B. Patient & Caregiver Use Cases: Data Access and Integration

Section B of the RFI asks how digital tools can help patients and family caregivers manage health needs, and what data access improvements are needed. Ab Initio views the emphasis on empowering patients with integrated health information and easy-to-use apps. Our view of the key use cases and pain points includes:

- **Unified Personal Health Records:** CMS asks if patients have easy access to all their health information in one place (e.g., a single portal or app).
- **Health Management Apps and Navigation:** The RFI invites ideas for health management or care navigation apps that could help patients understand their conditions and coordinate care.
- **Valuable but Inaccessible Data:** CMS pointedly asks: "what data is valuable but hard for patients or app developers to access?" Examples given include claims data, clinical records, doctors' notes, operative reports, appointment schedules, and prices.
- **Integration of Multiple Data Sources:** Building on the above, CMS asks about sources "other than claims and clinical data" that would be most valuable to integrate for patient use.
- **Blue Button API Expansion:** Medicare's current Blue Button 2.0 API allows patients to share basic claims and coverage data. Essentially, CMS is considering how to expand its open data offerings to stimulate better patient-facing apps.
- **Role of Health Exchanges and Networks:** The RFI inquires how network initiatives are helping patient data access. For example, is the new TEFCA really advancing patient access in reality? Similarly, the RFI asks about Health Information Exchanges (HIEs) – regional data hubs – and whether they effectively provide useful data to patients, how accurate/available that data is, and how HIEs should evolve amid newer data-sharing methods. In simple terms, CMS is evaluating whether these larger exchange networks are making it easier for a patient to get their records from anywhere.
- **Operational Use Cases for Patients:** CMS enumerates some specific high-impact patient use cases it wants feedback on. The common thread is leveraging data (on costs, schedules, quality, etc.) to empower patients and foster competition among providers, requiring seamless data integration from many sources (scheduling systems, pricing databases, quality reports, etc.).

Taken together, Section B highlights a need for robust data integration and interoperability to support patient-facing applications. Patients and caregivers want all their information in one place, but today's data is fragmented. Ab Initio's view is that CMS is looking for ways to break down these silos – through better APIs, broader data release (e.g., beyond claims), adoption of exchange networks, and innovative apps – so that Medicare beneficiaries can easily access and act on their health data.

Ab Initio Alignment with Section B. Patient & Caregiver - Data Integration Needs

Our capabilities strongly align with the data access and integration challenges identified for patients and caregivers:

- **Enterprise Data Integration:** Ab Initio is an integrated data processing platform built to handle complex, large-scale data from many sources. It excels at extracting and combining data across disparate systems and formats. This directly supports use cases like a unified personal health record app: Ab Initio can pull together data from EHR databases, claims systems, lab systems, and even unstructured documents (like scanned operative reports or physician notes) into one consolidated repository. Its high-performance ETL (extract-transform-load) engine can integrate complex enterprise data using sophisticated business logic at any scale, which is ideal for aggregating everything from clinical results to billing data for a patient. In short, Ab Initio could be the "behind-the-scenes" data integrator powering a one-stop health portal for Medicare patients.
- **Metadata Management and Data Quality:** A critical aspect of merging data from multiple providers is ensuring the data makes sense and is trustworthy. Ab Initio provides a built-in data catalog and governance system that can describe what data exists, where it came from, its definitions, and quality metrics. This is key for patient-facing data integration – for example, clearly labeling data sources (provider A's records vs. provider B's) or unifying terminology (ensuring a lab code or drug name is consistent across sources). Ab Initio's platform covers everything from data cataloging and quality to PII management and end-to-end governance, creating a solid data foundation. For CMS's goals, this means Ab Initio could help ensure that when a patient app pulls data from many systems, the metadata (data about the data) is in place to present it clearly and accurately. The platform even supports automated privacy controls, such as masking personal identifiers based on user permissions – relevant if different parties (patients vs. caregivers vs. developers) access the data. Ab Initio's focus on data quality and lineage would give CMS confidence that integrated patient records are complete and reliable, addressing obstacles identified in the RFI around missing data types or poor usability due to inconsistent data.
- **Access to "Hard-to-Reach" Data:** The RFI asks about valuable data that's currently hard to get (e.g. clinical notes, price lists). The Ab Initio Data Platform can connect to virtually any source – databases, files, APIs, legacy systems – and handle varied formats (structured, semi-structured, unstructured). For instance, if operative reports are in PDF or scanned images, Ab Initio can be paired with OCR or text-parsing components to extract that content and incorporate it into the patient's dataset. If appointment schedules are only available in a provider's system, Ab Initio could connect via API or database query to fetch that data regularly. Essentially, the software acts as a universal translator and aggregator, mitigating the technical barriers that make certain data hard to access today. Its ability to adapt to changes in data formats and sources at runtime provides agility – valuable when integrating new data types (like upcoming CMS datasets or third-party device data) as mentioned in the RFI.

- **Blue Button API Enhancement:** If CMS expands its Blue Button API with new data (beyond claims), Ab Initio can assist in exposing and managing those new data feeds. Ab Initio supports building web services and microservices on our platform. This means data integrated via Ab Initio can be delivered through APIs in real-time. For example, Ab Initio could take raw Medicare data (claims, encounters, provider info) from CMS systems, transform and enrich it (perhaps linking it with provider directory info or quality metrics), and then feed it into the Blue Button API interface for external developers. Its high-throughput engine ensures that even bulk data (e.g., a full claims history) can be delivered efficiently. By leveraging Ab Initio's graphical development and automation, CMS could implement new API endpoints faster and with fewer errors. In short, Ab Initio could be a backbone for the next-gen Blue Button, enabling the integration of richer datasets that developers have asked for.
- **Patient-Facing Use Case Support:** Many patient-oriented scenarios (cost comparison, provider search, scheduling) require combining data across silos in real-time. Ab Initio's support for real-time streaming and microservices means it can handle event-driven data flows. For example, to show a Medicare patient real-time schedule availability for multiple doctors, Ab Initio could continuously pull schedule data from various provider systems and update a unified availability index. Our low-latency streaming capability enables near-instantaneous updates – important for apps like appointment booking or real-time cost estimates during care navigation. Additionally, Ab Initio's searching, scoring, and matching functionality can perform record matching – useful in a "find the right provider" use case, where a patient's needs must be matched to provider specialties and quality metrics. While Ab Initio is not a consumer app platform, it provides the heavy lifting to integrate data and apply business rules so that patient-facing tools have fresh, comprehensive data to present.

In summary, the Ab Initio Data Platform is ideally suited to build the integrated data infrastructure that Section B of the RFI envisions. Our strength in unifying data silos, ensuring data quality, and handling diverse data types aligns perfectly with CMS's goal of giving patients and caregivers a 360° view of health information. Ab Initio's platform could fill key gaps – making currently inaccessible data accessible, powering expanded Medicare APIs, and delivering the timely, consolidated data feeds that innovative patient apps require.

C. Provider Use Cases: Data Exchange and Digital Identity

Section C of the RFI examines how to better support healthcare providers in exchanging data and using digital tools. CMS recognizes that providers are the ones generating much of the health data, and their workflows need to seamlessly connect with patient apps, other providers, and payers. Two focal areas from the RFI are improving data exchange (interoperability) and implementing digital identity solutions in healthcare settings.

Data Exchange and Interoperability for Providers

Providers (hospitals, clinics, doctors) use Electronic Health Record (EHR) systems that hold a wealth of patient data. The key is to make all that data exchangeable to improve care coordination and reduce redundant work. Key use case themes from the RFI include:

- **Access to All EHR Data:** The goal is to ensure a provider can get everything in a patient's record from another provider if needed – not just the structured lab results or meds, but also images, notes, etc., bridging the current gaps in data exchange.
- **Standard APIs Adoption:** CMS is pushing providers toward uniform, open APIs so data can flow more easily between systems and patients. Below are industry-standard interfaces as defined by HL7® FHIR for sharing health data:
    - Patient Access API – Allows patients to access their data from providers
    - Provider Directory API – Lists provider information and endpoints
    - Provider Access API – Lets providers query each other's data (a newer concept)
    - Payer-to-Payer API – Transfers patient records when someone switches insurers
    - Prior Authorization API – Streamlines insurance approvals
    - Bulk FHIR – Enabling large data exports (e.g., for a whole population)
    - SMART on FHIR & CDS Hooks – Plug-in apps in EHRs and decision support triggers
- **Use of National Networks (TEFCA):** CMS is asking providers if the Trusted Exchange Framework and Common Agreement (TEFCA) is helping their access to information.
- **Improving Data Availability and Reducing Burden:** CMS is looking for ways to align data sharing with existing provider incentives or workflows ("reuse what providers already have to do").
- **Quality Reporting via Bulk Data:** Today, providers must report various quality metrics (for value-based care, Medicare incentives, etc.), which can be burdensome. The questions are "Should CMS calculate quality metrics centrally?" "Should providers send de-identified patient data in bulk and CMS do the math?" While it would reduce their internal reporting work, these hinge on robust data exchange.
- **Administrative Workflows via APIs:** Another provider-facing use case connects administrative workflows (like patient intake forms, scheduling, referrals) to third-party apps. A patient can use

one app to manage appointments across multiple clinics. It's a forward-looking interoperability use case bridging clinical and administrative data.

Digital Identity for Healthcare Access

The RFI also focuses on digital identity credentials in healthcare. Currently, patients often need a separate login for every provider's portal, and providers maintain separate logins for various systems. CMS is considering a federated digital identity solution (such as Login.gov or ID.me) that could be accepted across providers and health apps. Key points include:

- **Single Login for Patients:** CMS asks how they might encourage providers to accept digital identity credentials from patients (e.g., a government-issued single sign-on). Could Medicare patients use one secure account to access all their doctors' systems? The aim is to improve patient convenience (one login to remember) while maintaining security and privacy.
- **Benefits and Challenges of Digital IDs:** What are the challenges, benefits, and potential downsides of digital identity credentials (like CLEAR, Login.gov, ID.me – which meet NIST security standards) in healthcare?
- **Provider Identity and Trust Communities:** The RFI touches on providers' own identities in networks. It mentions "trust communities" like TEFCA's networks, which require Identity Assurance Level 2 (IAL2) verification for participants. The broader vision is a health ecosystem where both patients and providers have secure, portable digital identities that streamline access to data.

In summary, Section C emphasizes modernizing providers' data exchange capabilities and identity management. The ideal future state is one where a provider can easily share comprehensive patient data with others (or with the patient's apps) through standard APIs and networks, and where patients don't need dozens of logins because a single trusted digital identity is widely accepted.

Ab Initio Alignment with Section C. Providers – Data Exchange & Digital Identity

Ab Initio's platform offers several features that align with CMS's interoperability and security needs (as described by CMS) and based on our healthcare customer experience:

- **Data Format Agnosticism:** Providers often struggle to exchange unstructured or non-standard data (like PDFs of faxed records). Ab Initio is designed to handle complex data formats and can incorporate virtually any data type into a unified processing flow. Using Ab Initio, a healthcare organization could set up processes to extract data from scanned documents or free text (using text mining libraries alongside Ab Initio's pipelines) and convert it into shareable formats. For example, Ab Initio can parse HL7 v2 messages, JSON/XML including FHIR, DICOM, and even binary or image data with the right extensions. By serving as a data transformer, Ab Initio would enable the vision of making all EHR content exchangeable. It can take a blob of text (a clinical note) and structure key elements or link an image reference (like a DICOM imaging file) to the patient's record so that it's not lost in exchange. This addresses the RFI's call for technical solutions to include every format of interoperability. Ab Initio's highly scalable engine ensures

that even large imaging datasets or bulk text can be processed for exchange in reasonable time, which is crucial for hospital networks dealing with many records.

- **Actively managing metadata** allows simplification to manage thousands of business terms by automatically connecting to potentially hundreds of thousands of technical terms. This approach enables an increased understanding of how data is collected, curated, and consumed at a business-term level. Changes such as re-classifying a single business term "sensitive information or PHI" can be changed at the business term and then propagated down to dozens if not hundreds of technical terms associated with that business term. This automation-leveraging metadata keeps the data ecosystem transparent, efficient, and agile.
- **Implementation of Standard APIs and Bulk Data:** Ab Initio supports web services, microservices, and real-time APIs creation on top of integrated data. For a provider organization (or a vendor serving providers), Ab Initio could be used to implement the backend of various FHIR APIs:
    - It can aggregate patient data from internal systems and present it via a Patient Access API endpoint.
    - It can maintain an up-to-date Provider Directory by pulling from HR databases and NPI registries, and then exposing it via API. Ab Initio's NLP and AI capabilities are leveraged through a provider roster pipeline that improves the timeliness and efficiency of managing provider roster changes to improve accuracy.
    - For Payer-to-Payer or Provider-to-Provider APIs, Ab Initio can convert internal data to the required FHIR standard on-the-fly as data requests come in.
    - Notably, Ab Initio's ability to handle both individual queries and bulk data in one platform is a strength. It can execute high-volume exports (Bulk FHIR) by leveraging its parallel processing engine – for instance, extracting entire patient records for quality reporting or research – while also supporting low-latency single-patient lookups for point-of-care needs. This means a provider could use one technology stack to satisfy multiple CMS API requirements (rather than separate solutions for batch vs real-time).

In essence, Ab Initio can be the glue that links EHR databases to FHIR API interfaces. Its metadata-driven approach also helps ensure that all necessary data elements can be mapped and included when permissible, aligning with CMS's push to provide access to all data elements of a patient's record via APIs. By using Ab Initio to orchestrate these standard APIs, CMS can accelerate compliance with interoperability mandates without starting from scratch – the platform handles data translation, routing, and scaling concerns.

- **Streamlining Data Exchange Workflows:** To reduce provider burden, one strategy is automation and dual-purpose data flows. Ab Initio's platform is big on automation and reuse – for example, it supports metadata-driven applications and automated data quality rule generation. In practice, this means a health system could set up an Ab Initio process that both populates an internal quality dashboard and at the same time prepares data for external reporting. Ab Initio could take EHR data, run quality measure calculations (via business rule components), and output results to CMS in the required format, while also updating the provider's own records. Because Ab Initio can operate in batch or real-time, a hospital might nightly compile a Bulk FHIR

export for CMS (satisfying reporting) and feed the same data into a local analytics system for care improvement – using one streamlined workflow. This aligns with CMS's suggestion of reusing existing provider's efforts for interoperability. By automating data prep and submission, Ab Initio can significantly cut down manual work. Its enterprise scheduling and monitoring capabilities ensure these data exchanges happen reliably (important if CMS moves to require more frequent or automated data submissions from providers).

- **Bulk Data and Quality Reporting:** If CMS were to implement bulk data collection for quality, providers (or their IT vendors) would need to generate and transmit large datasets efficiently. Ab Initio's high-performance engine is well-suited for this heavy lift. It can handle bulk exports of EHR data – for instance, converting a full set of patient records into a standardized FHIR bulk data file – and do so on a regular schedule with fault tolerance. Thanks to its parallel processing and distributed execution, even millions of records can be processed in a manageable time window. Moreover, Ab Initio's data quality tools could validate the dataset before sending, catching errors that might cause rejection or inaccuracies. By ensuring the bulk data is clean and complete, it helps both providers and CMS trust the results. So, in a scenario where CMS says, "just send us your raw data, we'll do the rest," Ab Initio can be the provider's go-to solution to package that raw data correctly and efficiently. This capability directly speaks to questions like using Bulk FHIR for quality and reducing provider reporting burden.
- **Integration with Health Information Networks:** Providers are increasingly connecting to HIEs and frameworks like TEFCA. Ab Initio can act as a powerful integration layer between a provider's internal systems and external networks. For example, to participate in an HIE, a provider might need to continuously feed patient updates to the exchange and consume data from it. Ab Initio's real-time streaming feature allows for event-driven data sharing – as soon as a patient is admitted or a result is finalized, Ab Initio can transform and transmit that data to the HIE. Conversely, when querying the network for outside records, Ab Initio can receive the data (in C-CDA or FHIR format) and integrate it into the provider's own EHR or data lake. Its resilience and exactly-once processing guarantees prevention of duplicate records or missed updates, which is vital for trust in network data. Essentially, Ab Initio can serve as the "interface engine" for providers to plug in to broader networks, handling all the diverse protocols (FHIR REST APIs, legacy HL7 feeds, etc.) in one place. This supports CMS's goal of making TEFCA and other exchanges more usable by providers. Providers won't engage with networks if it's too complex or costly – Ab Initio can lower that barrier by providing a ready-made integration hub.
- **Security and Digital Identity Integration:** While Ab Initio is not an identity provider, it does offer robust security and governance features that complement digital identity initiatives. Ab Initio's Metadata Hub can store and enforce access policies – e.g., which roles or user types can see certain data fields. This means if CMS promotes a model where a patient authenticates via a federated ID (e.g., Login.gov), Ab Initio can integrate that authentication token into its data pipelines, ensuring that only authorized data is returned for that patient and that any sensitive fields are properly masked or omitted based on consent. In a provider setting, if a trusted digital identity can indicate that a patient has provided consent for data sharing, Ab Initio can use that flag in its business rules to allow data exchange to proceed, or not. Essentially, Ab Initio acts on identity and consent information to govern data flow. Additionally, Ab Initio's data lineage capabilities track where data came from and where it goes – important for security auditing in a

multi-identity environment. If all data access is tied to a digital identity, Ab Initio can log "User X (via Login.gov) accessed Data Y," which helps providers feel secure in adopting external IDs.

On the provider side, Ab Initio can help implement a single sign-on for data systems by integrating with identity providers that support SAML/OAuth standards. For instance, if a hospital accepts a provider's NPI credential or an ID.me credential, Ab Initio can map that to internal user permissions and ensure smooth data access across its platform. This is more indirect support, but it addresses the RFI's question of what help providers would need to transition to a single trusted credential model. They'd need their internal apps and data flows (like those powered by Ab Initio) to trust and leverage the external credential – something Ab Initio can be configured to do within its governance framework.

In summary, Ab Initio aligns well with providers' needs to exchange data more freely and securely. It provides the heavy-duty integration and processing required to implement standard APIs (enabling compliance with interoperability mandates) and to share full-fidelity patient data, including challenging formats. At the same time, Ab Initio's governance and security features allow providers to maintain control and privacy – which will be critical as digital identity and open data sharing expand. By using Ab Initio, providers (and their technology partners) can more easily meet CMS's interoperability objectives, whether it's scaling up to nationwide data networks or automating bulk data submissions, all while minimizing the manual burden and ensuring data is protected.

E. Technology Vendor & Network Use Cases: Ecosystem, Digital Identity, and Data Exchange

Section E of the RFI turns to the perspective of technology vendors, data providers, and health information networks. CMS is effectively asking the industry: "How can CMS jumpstart a vibrant digital health ecosystem for Medicare?" This includes making more data available (with appropriate safeguards), adopting modern tech standards, and ensuring that the infrastructure (networks, directories, identity systems) is in place for seamless exchange. Key focus areas:

Building a Digital Health Ecosystem

- CMS wants to stimulate developer interest in creating Medicare-focused digital health products:
    - Catalyzing Developer Innovation: CMS asks for short-term (next 2 years) and long-term steps to get more developers building apps for Medicare beneficiaries and caregivers.
    - Expanding CMS Data and APIs: One obvious way to entice developers is to offer valuable data.

  Essentially, CMS recognizes that data is the fuel for digital health innovation. They are inventorying what high-value data is currently locked up and how to responsibly open it to third parties.
- Open vs. Proprietary Standards: The RFI asks how CMS can better encourage use of open standards-based APIs over proprietary ones.
- Nationwide FHIR Endpoint Directory: A recurring idea is a unified directory of FHIR endpoints (APIs of healthcare organizations). CMS asks if such a directory would improve access for

patients, providers, payers, and who should publish it (and whether it should be free or paid). A comprehensive directory would greatly reduce the friction in point-to-point connections by making discovery easier.

Digital Identity and Security in the Ecosystem

From a vendor/network standpoint (Section E "Digital Identity"), CMS raises similar identity questions as in Section C.

a. Challenges/Benefits of Digital Identity: Benefits could include improved cybersecurity and user convenience; challenges might be integration complexity, user adoption, or cross-platform compatibility.

b. Mandatory Identity Protocols: Would requiring digital identity credentials (like a government-backed login) impact cybersecurity and data exchange, and what would be the impact of mandatory OpenID Connect protocol?

Data Exchange and Network Infrastructure

The Section E questions on "Data Exchange" dive into the ecosystem of health data networks and future possibilities:

- Endorsing Non-CMS Data Sources: CMS asks if it should endorse or incorporate non-CMS data sources and networks, and what criteria to use. Non-CMS sources include state health info exchanges, private networks (CommonWell, Carequality), or data from other federal agencies.
- APIs for Full Electronic Health Information (EHI): This envisions an API that could deliver everything in a patient's record (with permission) – from doctor's notes to imaging to insurance info.
- Networks' Use of FHIR APIs: CMS basically wants to know the state of network interoperability.
- Bulk Data in Networks: How more use of bulk data APIs could improve data flow, and potential downsides.
- Point-to-Point vs. Centralized Infrastructure: An interesting policy/design question: CMS is essentially asking if policy should push towards more centralized exchanges (like TEFCA hubs) or if the status quo can be improved by standardizing those point-to-point connections better.
- Sustainable Data Sharing Networks: What role CMS or ONC should have in ensuring viability of data sharing networks, including balancing supply and demand so that the networks actually get used?
- Information Blocking and Compliance: CMS asks vendors for examples of information blocking they've seen (practices where actors discourage or impede data sharing).

Overall, Section E paints a picture that CMS is looking to create a fertile ground for innovation: more data (and types of data) freed up via APIs, strong digital identity to simplify auth, interconnected networks or directories to simplify data discovery, and a policy environment that rewards sharing and penalizes hoarding. It's about building the digital health ecosystem needed for patients, providers, and payers to benefit from modern tools.

Ab Initio Alignment with Ecosystem & Network Needs

Ab Initio, as a mature data platform, can play several important roles in the broader health IT ecosystem that CMS envisions:

- **Data "Liberation" and API Ecosystem Enablement:** A core way to spur innovation is by providing rich data through APIs. Ab Initio's strength in data integration makes it an ideal engine for data liberation initiatives. If CMS or other agencies choose to release new datasets (claims archives, provider quality data, etc.), Ab Initio can be used to ingest raw data from legacy systems and prepare it for developer-friendly APIs. Its ability to handle both historical batch data and real-time updates means it could, for example, take in weekly updated datasets (like new claims or assessments) and merge them with existing API data stores. By ensuring data is clean, well cataloged, and accessible via web services, Ab Initio essentially helps create new API endpoints faster. For instance, if developers say hospital price data is valuable alongside Blue Button claims, CMS could use Ab Initio to integrate hospitals' published price lists, standardize them, and expose a query API. Ab Initio's automation can keep such data pipelines running with minimal manual intervention, which lowers the cost of maintaining open data feeds.
- **Combining Multiple Data Sources:** The RFI emphasizes combining CMS data with other sources (like HIE data and social data). Ab Initio's platform includes features for building a virtual data hub – meaning it can bring together data from many sources without necessarily duplicating all of it in one place. This virtual integration, along with its powerful connectors, would allow an application to query across datasets. For example, an app could query a Medicare claims dataset and a public health registry in one go if Ab Initio is set up to federate or unify those sources. Ab Initio also supports metadata-driven data discovery, which could help catalog what data is available from CMS vs. other sources, making it easier to publish in a marketplace or directory for developers. In short, Ab Initio can serve as the data orchestration layer that merges disparate datasets into a coherent API output, addressing the RFI's call for APIs that unleash innovation by combining data.
- **Adherence to Open Standards:** As CMS pushes for open standards (FHIR, open identity protocols), Ab Initio is well-positioned because it is technology-agnostic and extensible. It can parse and generate FHIR JSON resources, HL7 messages, X12 EDI (for claims), etc., using either built-in components or custom extensions. Ab Initio doesn't lock data into a proprietary format; instead, it acts as a conduit. This is aligned with CMS's preference for open APIs over proprietary ones. An organization using Ab Initio software can embrace standards by leveraging libraries and pre-built transformations (for example, mapping internal data models to FHIR resources). Ab Initio's emphasis on future-proofing and modernization means it's designed to adapt to new standards as they emerge. Thus, if CMS requires adherence to, say, the OpenID Connect standard for authentication, an Ab Initio-based solution can integrate that standard (e.g., accepting tokens, calling identity provider APIs) rather than forcing a custom auth method. Ab Initio essentially can be the "no special effort" interface layer to comply with standards – echoing the Cures Act requirement that data be accessed "without special effort" by users.

- **Building Nationwide Directories and Hubs:** Some of the infrastructure CMS is considering – like a national FHIR endpoint directory or large-scale provider directories – are data management challenges at heart. They involve aggregating data from many contributors (every provider or every API endpoint in the country), cleaning it, de-duplicating entries, and regularly updating it. This is a classic use case for Ab Initio's data quality and matching capabilities. With its searching, scoring and matching module, Ab Initio can deduplicate records (e.g., figuring out that "Dr. John Smith at 123 Main St" in one list is the same as "John A. Smith, M.D." in another) and maintain a single source of truth. It also can automate data-refresh processes and apply business rules (like flagging endpoints that do not respond). By leveraging Ab Initio, CMS or a partner could implement a robust Provider API Directory far more easily, ensuring it's comprehensive and up-to-date. Moreover, Ab Initio's capacity to handle both centralized and distributed data fits the scenario where some directory info might be federated – it could periodically sync with other sources (like NPPES or state directories) to populate the national one. Ab Initio provides the heavy lifting for data aggregation and governance that a national directory would require, aligning with RFI questions on how to improve endpoint discovery.
- **Scaling Health Information Networks:** Ab Initio can support both point-to-point integrations and hub-and-spoke models. If the industry leans toward point-to-point API calls, Ab Initio can manage the myriad connections on behalf of an organization: it can be configured with all trading partners' endpoints and automate pushing or pulling data to each, applying transformations as needed for each partner's requirements. This addresses the reality that not every provider or vendor will be on the exact same standard at once – Ab Initio can act as a mediator, doing custom mappings for each connection while still streamlining the process through a central platform. On the other hand, if shared network infrastructure (like joining a network) is the model, Ab Initio can be the internal bridge to that network, as discussed for TEFCA/HIE integration. It ensures that whichever model (point-to-point vs. network) or hybrid of both emerges, the organization isn't technically stymied – the platform's flexibility covers both. Its elastic scaling means that, as more connections or higher throughput is needed, it can scale out across more servers or containers without a complete redesign. This is key for sustainability: networks often start small and grow, and a solution that scales smoothly avoids expensive re-platforming. Thus, Ab Initio helps alleviate the tradeoff concerns mentioned in the RFI by offering a solution that can adapt to either approach while maintaining high performance and reliability.
- **Bulk Data Exchanges and Analytics:** In an ecosystem where data may be exchanged not just in transactional ways but also in bulk for analytics or population health, Ab Initio stands out. It can feed data into analytics platforms or data clouds that companies like Snowflake or Databricks provide (more on these in the competitive analysis section). Ab Initio can be the ETL pipeline that ensures those platforms have the latest interoperable data to analyze. For example, if a nationwide research initiative wants to pull full EHI on 100,000 patients across systems, Ab Initio can orchestrate those pulls in parallel, normalize the data, and load it into a research database or lake. This unlocks the "new opportunities" CMS alludes to with full EHI APIs – such as advanced AI on health data – because the data preparation bottleneck is handled. It also addresses obstacles: Ab Initio can implement privacy filters and consents (ensuring only

permissible data flows) and manage the "tradeoffs between USCDI and full EHI" by possibly tagging data elements by sensitivity or reliability so recipients know what they're dealing with.

- **Information Blocking and Compliance Solutions:** Ab Initio's governance features can directly help organizations avoid information blocking. By cataloging all data and having clear rules on access, an organization can confidently share data it's supposed to, and log when and why data was not shared (for legitimate exceptions). If CMS tightens info blocking enforcement, providers and vendors will need to demonstrate compliance. Ab Initio's audit and lineage functions provide that traceability – one can trace a data request through the system and show it was fulfilled or see where it failed. This kind of transparency is what CMS might consider a mitigation to information blocking complaints. Additionally, if CMS were to define certain price transparency data formats or require submission to a central portal, Ab Initio could be used by hospitals or insurers to aggregate their pricing data from various internal systems, ensure it's formatted to spec, and automatically update their public files or send them to CMS. It thus helps with the "shortcomings in content, format, timeliness" of price transparency data by automating and standardizing the process.

In essence, Ab Initio serves as a powerful backbone for the digital health ecosystem CMS is fostering. It can bridge legacy systems and modern cloud services, ensure data is prepared and available where needed, and enforce governance so that trust is maintained. While Ab Initio isn't a consumer-facing brand in healthcare, its behind-the-scenes capabilities align with many of the infrastructure needs – from expanding APIs, to running large directories, to handling big data exchange – that CMS identifies. This makes Ab Initio a compelling partner to consider for initiatives that require heavy data lifting with precision and scale.

Integrators and Partners

Ab initio will team with partners that will augment our capabilities. Ab Initio views partners and integrators as a force multiplier, especially in the Federal and Healthcare spaces.

We are accustomed to working with large integrators (CACI, Peraton, etc.), hyperscalers (AWS, Azure, GCP, and Oracle) and clinical organizations (BCBS Federal Employee Program, BCBS South Carolina, CareFirst, etc.) within our Federal and Healthcare practices.

In many cases, customers ask us to work with their providers to deliver solutions. We also work with smaller boutique partners with domain-specific expertise. Ab Initio is a software vendor with extensive expertise in enabling healthcare data delivery and data management. Our technology is sufficiently robust and comprehensive that we do not require partners in the data management space.

We also propose running in the FedRAMP-authorized cloud provider of your choice (AWS GovCloud, Azure Government, or Google Cloud's High or Moderate authorization services).

B. Patients and Caregivers

2. Data Access and Integration

PC-8. In your experience, what health data is readily available and valuable to patients or their caregivers or both?

a. What data is valuable, but hard for patients and caregivers, or app developers and other technical vendors, to access for appropriate and valuable use (for example, claims data, clinical data, encounter notes, operative reports, appointment schedules, prices)?

While Electronic Health Records (EHRs) store detailed patient histories, lab results, and treatment plans, interoperability issues often prevent seamless and timely access. Real-time access to provider availability could improve patient scheduling, but many systems lack open APIs for integration – this closed system approach is not helpful for the goal of interoperability and data sharing. Encounter notes/reports contain critical details about patient visits and surgeries, but they are often locked within provider systems and not easily shared. We have helped our clients gain access either due to the priority nature of the APIs or confusing stages of interoperability adoption.

Patients and caregivers benefit most from easy access to key health information like medication lists, lab results, visit summaries, and claims records – data that is often readily available through patient portals or Medicare's Blue Button 2.0 API. However, some high-value data remains difficult to obtain. For example, detailed clinical notes, imaging files, operative reports, or real-time cost and scheduling information can be hard for patients to gather electronically due to siloed systems and limited interoperability. Best practices in healthcare data management call for integrating these disparate sources through open standards (like HL7 FHIR APIs) and data-sharing frameworks so patients can see a comprehensive, unified health record. In practice, this means breaking down barriers between clinical EHR data, claims data, and other sources (e.g., social determinants or wearable data) and making them securely accessible in one place.

b. What are specific sources, other than claims and clinical data, that would be of highest value, and why?

These include encounter notes/reports, appointment scheduling, pricing information (due to complex pricing structures), social determinants of health (SDoH), genomics/biomarker data, medication adherence, pharmacy data, provider facility quality metrics (improved patient decision making based on hospital and provider performance data), patient reported outcomes reporting (direct feedback from patients of symptoms) and wearable/remote monitoring data (real-time insights into patient health by continuous monitoring).

c. What specific opportunities and challenges exist to improve accessibility, interoperability and integration of clinical data from different sources to enable more meaningful clinical research and generation of actionable evidence?

Data is not the issue; it is the willingness to share the data and make it available, as well as the lack of standards enforcement.

PC-9. Given that the Blue Button 2.0 API only includes basic patient demographic, Medicare coverage, and claims data (Part A, B, D), what additional CMS data sources do developers view as most valuable for inclusion in the API to enable more useful digital products for patients and caretakers?

1. Medicare Advantage (Part C) Claims Data
    - **Why valuable**: Covers a growing proportion of Medicare beneficiaries (~50% as of 2024).
    - **Benefit**: Gives a complete view of medical utilization and costs for enrollees not captured in traditional Medicare.
    - **Use cases**: Better chronic care management, medication adherence monitoring, and cost estimation tools.
2. Medicaid Claims and Enrollment Data
    - **Why valuable**: Supports dual-eligibles and low-income populations who often have fragmented records.
    - **Use cases**: Care coordination, population health management, and social determinant-aware tools.
3. Clinical Data from EHRs via Medicare's Data at the Point of Care (DPC) API
    - **Why valuable**: Provides richer clinical context (e.g., labs, vitals, diagnoses) missing from claims.
    - **Use cases**: Personalized care plans, predictive analytics, clinical decision support.
4. Social Determinants of Health (SDOH) Data
    - **Why valuable**: Enables addressing non-clinical barriers to health like housing, food, and transportation.
    - **Use cases**: Risk stratification, community-based resource referral tools.
5. Provider Quality and Performance Metrics
    - **Why valuable**: Helps patients compare provider quality and outcomes.
    - **Use cases**: Provider selection tools, referral optimization, value-based care alignment.
6. Prescription Drug Event (PDE) Data Details
    - **Why valuable**: Enhanced granularity in prescription fills and adherence patterns.
    - **Use cases**: Medication reconciliation tools, adherence tracking apps.

a. What difficulties are there in accessing or utilizing these data sources today?

1. Fragmented and Siloed Data Infrastructure
    - CMS maintains different datasets across multiple platforms and programs (e.g., CCW, DPC, Blue Button), each with different standards and access protocols.
2. Limited or No API Access
    - Many datasets are still accessed via batch files or static reports (e.g., Research Identifiable Files), which are not real-time or scalable for patient-facing apps.
3. Complex Data Use Agreements and Legal Barriers
    - Access to non-Blue Button data often requires IRB approval, Data Use Agreements (DUAs), or demonstration of research/public benefit, which limits use for commercial or direct-to-consumer apps.
4. Data Latency and Incompleteness
    - Claims data have a lag (often 3–6 months) and may miss recent hospitalizations or prescriptions.
    - Medicare Advantage data in particular is not standardized or timely across plans.
5. Lack of Patient Matching Standards
    - Integrating data across CMS, EHRs, and private payers suffers from inconsistent patient identifiers and formats.
6. Data Literacy and Interpretation Barriers
    - Developers struggle with claims taxonomy (e.g., CPT, HCPCS, ICD-10), requiring expertise or interpretation layers to build patient-friendly applications.

b. What suggestions do you have to improve the Blue Button 2.0 API experience?

Patients and caregivers benefit most from easy access to key health information like medication lists, lab results, visit summaries, and claims records – data that is often readily available through patient portals or Medicare's Blue Button 2.0 API. However, some high-value data remains difficult to obtain. For example, detailed clinical notes, imaging files, operative reports, or real-time cost and scheduling information can be hard for patients to gather electronically due to siloed systems and limited interoperability. Best practices in healthcare data management call for integrating these disparate sources through open standards (like HL7 FHIR APIs) and data-sharing frameworks so patients can see a comprehensive, unified health record. In practice, this means breaking down barriers between clinical EHR data, claims data, and other sources (e.g., social determinants or wearable data) and making them securely accessible in one place.

c. Is there non-CMS data that should be included in the API?

Summary and Strategic Value

Adding non-CMS data to the Blue Button 2.0 API would:

- **Enrich the clinical picture** with real-world, behavioral, and environmental data.
- **Empower digital health developers** to build more accurate, personalized, and effective tools.
- **Bridge critical care gaps** for underserved populations by combining medical, social, and preference-based data.

SDOH and PGHD are particularly high-impact, given their proven links to preventable hospitalizations, medication adherence, and chronic disease control.

1. Social Determinants of Health (SDOH) Data

Examples:

- Income level, education, employment status
- Housing stability, food security, transportation access
- Neighborhood-level data on crime, walkability, and pollution

Impact on Outcomes:

- Up to 80% of health outcomes are driven by SDOH rather than clinical care.
- Enables better risk stratification, proactive outreach, and care navigation tools.
- Integration allows for personalized recommendations that go beyond clinical advice (e.g., help finding healthy food or housing resources).

Key Sources:

- Community health assessments (e.g., from local public health departments)
- U.S. Census Bureau, American Community Survey
- Commercial SDOH aggregators (e.g., LexisNexis Risk Solutions, Unite Us, Aunt Bertha)

2. Patient-Generated Health Data (PGHD)

Examples:

- Wearables (e.g., Fitbit, Apple Watch): steps, heart rate, sleep
- Home monitoring: glucose meters, blood pressure cuffs, smart scales
- Symptom trackers and mood diaries

Impact on Outcomes:

- Real-time behavioral and biometric data enables early detection of deterioration, better chronic disease management (e.g., diabetes, hypertension), and continuous monitoring.
- Encourages self-management and patient engagement, which are critical for long-term health improvements.

Key Sources:

- Device APIs (Apple HealthKit, Google Fit, Withings, etc.)
- Remote patient monitoring (RPM) platforms
- Consumer health apps integrated with FHIR

3. Electronic Health Record (EHR) Data from Non-Medicare Providers

Examples:

- Clinical notes, lab results, radiology images, immunizations
- Specialist encounters not billed through Medicare

Impact on Outcomes:

- Provides the clinical context missing from claims data, including diagnoses, vitals, and treatment plans.
- Improves accuracy of digital health tools that rely on AI models or decision support.
- Essential for coordinated care, especially in multi-provider scenarios.

Key Sources:

- EHR vendor APIs (e.g., Epic, Cerner via FHIR/SMART)
- Health Information Exchanges (HIEs)
- TEFCA-connected Qualified Health Information Networks (QHINs)

4. Private Insurance Claims Data

Examples:

- Employer-sponsored insurance (ESI) or individual marketplace plans
- Vision, dental, mental health coverage details

Impact on Outcomes:

- Fills in gaps for patients who have multi-payer coverage or transitioned from Medicare Advantage/private plans.
- Supports longitudinal health tracking, cost transparency, and total cost of care estimation.

Key Sources:

- Carriers offering APIs (e.g., UnitedHealth, Cigna, Aetna)
- CARIN Alliance Blue Button framework (for commercial data)

5. Patient Preferences and Advance Directives

Examples:

- Preferred language, religious/cultural considerations, care goals
- Advance care planning documents (e.g., POLST, living wills)

Impact on Outcomes:

- Informs person-centered care, especially in end-of-life and chronic care settings.
- Reduces unwanted or non-beneficial interventions, increases patient satisfaction.

Key Sources:

- Patient portals
- Personal health record (PHR) apps
- Legal document storage platforms

PC-10. How is the Trusted Exchange Framework and Common Agreement TM (TEFCA^{TM}) currently helping to advance patient access to health information in the real world?

TEFCA **is actively transforming** the U.S. health data exchange landscape by:

- Enabling secure, standardized, nationwide data sharing
- Supporting cross-vendor patient data access
- Powering app-based tools to serve patients with richer, longitudinal data

While its full potential is still unfolding, early QHIN activity, use case implementation, and federal backing indicate that TEFCA will be a cornerstone in scalable, equitable patient access in the coming years.

a. Please provide specific examples.

Standardizing data sharing protocols will help a significant amount in terms of patients being able to retrieve their medical history across different providers with limited delays, improve information sharing between providers to enhance coordinated care, reducing burden around administrative inefficiencies in claims processing and prior authorizations.

b. What changes would you suggest?

We would consider adoption of a semantic or metadata interoperability approach to make data more structured, accessible, and meaningful across different systems.

Standardizing data interpretation with a semantic layer ensures that different healthcare systems "speak the same language," reducing misinterpretation of medical terms and improving data consistency. This will also enhance Interoperability by mapping diverse terminologies to shared meanings.

Semantic layers allow seamless data exchange between hospitals, providers, insurers, and app developers. Semantic or metadata layers enable real-time, dynamic harmonization of clinical, operational, and administrative data, ensuring that healthcare providers have the most up-to-date information.

Semantic layers help track data lineage, enforce access controls, and ensure compliance with regulations like HIPAA, thereby improving compliance and security.

Finally, with AI-driven analytics becoming so valuable, semantics/metadata can optimize decision making – think about leveraging structured metadata to improve predictive insights, improving patient outcomes and provider resource allocations.

c. What use cases could have a significant impact if implemented through TEFCA?

These would include automated prior authorizations and AI-driven predictive analytics for early disease detection and personalized patient treatment recommendations.

There are several high-impact use cases that, while not yet fully implemented under the TEFCA ecosystem, could greatly improve patient outcomes, health equity, and care efficiency if pursued in future expansions. These use cases would build on TEFCA's interoperability foundation, leveraging QHINs to support broader health IT functionality beyond basic record exchange.

1. **Real-Time Event Notifications (ADT Alerts)**

   Description:

   Automated alerts when a patient is admitted, discharged, or transferred (ADT) from a healthcare facility.

   Potential Impact:

   - Enables **timely follow-up care** from primary care providers or care managers.
   - Reduces hospital readmissions.
   - Supports **care coordination** across disparate systems and settings.

   Why TEFCA?:

   QHINs are well-positioned to serve as intermediaries for real-time event data delivery across organizations, enabling national-scale alerting networks.

2. **Post-Acute Care and Home Health Coordination**

   Description:

   Data exchange between hospitals, skilled nursing facilities (SNFs), home health agencies, and community providers.

   Potential Impact:

   - Smooth transitions of care
   - Better medication reconciliation and therapy continuity
   - Reduced rehospitalizations and fragmentation

   Why TEFCA?:

   Most post-acute providers are non-hospital-based and poorly integrated. TEFCA could unify data sharing via shared QHIN infrastructure with simplified onboarding.

3. **ePrescribing and Medication Reconciliation Integration**

   Description:

   Consolidation of medication history across providers and pharmacies, including reconciliation after discharge

   Potential Impact:

   - Improves medication adherence and safety.
   - Reduces adverse drug events, especially in polypharmacy patients.
   - Supports pharmacist-led interventions.

   Why TEFCA?:

   Could leverage national pharmacy networks and claims feeds to create real-time med lists, supplementing what is often missing in EHRs alone.

4. **Patient-Reported Outcomes and Remote Monitoring Data Exchange**

   Description:

   Bi-directional sharing of data from wearables, apps, and surveys into EHRs and care plans.

   Potential Impact:

   - Enables personalized chronic disease management (e.g., blood pressure, glucose, mood).
   - Supports value-based care metrics based on quality of life and function.
   - Empowers patient self-management.

   Why TEFCA?:

   QHINs could offer trusted pathways for patient-generated data exchange, helping normalize and standardize PGHD ingestion into clinical workflows.

5. **Claims and Clinical Integration for Total Cost of Care Insights**

   Description:

   Merging Medicare or commercial claims with EHR data to power full-spectrum care management and analytics.

   Potential Impact:

   - Supports risk stratification and value-based contracts.
   - Enables cost transparency tools for patients and providers.
   - Improves utilization management and resource targeting.

   Why TEFCA?:

   Could act as a unifying layer to blend payer and provider data, particularly if CMS claims or private payers join as QHIN participants.

6. **Consent Management and Delegated Access Control**

   Description:

   A national, interoperable system for patients to set granular data-sharing preferences (e.g., allow mental health data only to selected providers).

   Potential Impact:

   - Respects patient privacy and autonomy.
   - Enables broader sharing without blanket consent.
   - Supports caregivers or proxies with permissioned access.

   Why TEFCA?:

   ONC and QHINs could act as trust brokers using FHIR-based consent standards to propagate rules across systems.

7. **Genomic and Precision Medicine Data Exchange**

   Description:

   Integration of genetic test results and risk scores into the clinical record and decision-making process.

   Potential Impact:

   - Tailored treatment strategies (e.g., pharmacogenomics, cancer screening)
   - Accelerates adoption of
   - Avoids redundant testing

   Why TEFCA?:

   Could help create standards-based pathways for labs and health systems to share structured genomic data securely and consistently.

   Summary

These unimplemented use cases have the power to transform the TEFCA ecosystem from a document retrieval network into a dynamic, data-driven care coordination and engagement platform. Each:

- Addresses a key gap in patient safety, care continuity, or data accessibility.
- Aligns with policy goals around value-based care, equity, and digital health.
- Builds on existing TEFCA infrastructure (e.g., identity, trust, routing).

d. What standards are you aware of that are currently working well to advance access and existing exchange purposes?

Several data and interoperability standards are currently playing a critical role in advancing access to health information and enabling efficient data exchange across providers, payers, patients, and digital health tools. These standards underpin the success of initiatives like TEFCA, Blue Button 2.0, and the broader 21st Century Cures Act ecosystem.

Below is a structured overview of key standards that are working well today and how they support access and exchange.

1. **FHIR® (Fast Healthcare Interoperability Resources)**

   Overview:

   - Developed by HL7, FHIR is a modern, web-based standard that defines data formats and APIs for exchanging electronic health records.

   Why It Works Well:

   - Widely adopted by EHR vendors (e.g., Epic, Cerner, Athenahealth).
   - Supports modular, RESTful APIs, making it easier for apps to access discrete health data (e.g., medications, allergies, labs).
   - Powering Apple Health, patient portals, and TEFCA-aligned APIs.

   Use Cases Enabled:

   - Patient access APIs (under CMS and ONC rules)
   - App-based tools pulling from multiple health systems
   - Integration with wearable devices and RPM platforms

2. **OAuth 2.0 and OpenID Connect (OIDC)**

   Overview:

   - Security and authorization protocols used to control access to patient data via APIs

   Why It Works Well:

   - Standardized consent and access workflows for apps
   - Used in SMART on FHIR for secure app launch in clinical environments
   - Enables third-party apps to access patient records with user authorization, in a secure and controlled way

   Use Cases Enabled:

   - Individual app access to EHR data via Blue Button or payer APIs
   - Delegated access models for caregivers

3. **SMART on FHIR**

   Overview:

   - A profile built on top of FHIR and OAuth 2.0 to **support secure, context-aware app launches** within EHR environments

   Why It Works Well:

   - Standardized app integration across multiple EHRs
   - Supported by CMS, ONC, and major vendors
   - Facilitates a plug-and-play ecosystem of clinical and patient apps

Use Cases Enabled:

- Clinical decision support apps launched within provider workflows
- Patient-facing apps embedded in portals
- Research apps and tools like mCODE for oncology

4. **X12 EDI (Especially 270/271, 278, 837, 835)**

Overview:

- Traditional standard for claims, eligibility verification, prior authorizations, and payments between payers and providers.

Why It Still Works:

- Ubiquitous in the payer-provider space
- Though legacy, X12 still supports millions of daily transactions reliably
- CMS and private payers still rely on it for many workflows

Use Cases Enabled:

- Eligibility checks (270/271)
- Claims submission (837)
- Remittance advice (835)
- Prior authorizations (278)

5. **US Core Data for Interoperability (USCDI)**

Overview:

- A set of standardized data elements and classes required for exchange under federal rules

Why It Works Well:

- Provides a common baseline of patient data (e.g., demographics, meds, labs)
- Required for ONC-certified EHR technology
- Ensures that exchanged data is semantically consistent and usable

Use Cases Enabled:

- TEFCA's data classes
- Patient access under Cures Act mandates
- Quality reporting and care coordination

6. **IHE Profiles (e.g., XDS, PIX/PDQ, MHD)**

   Overview:

   - Integrating the Healthcare Enterprise (IHE) develops profiles that define how existing standards (e.g., HL7, DICOM) should be used in practice.

   Why They Work:

   - Address real-world interoperability problems (e.g., document sharing, patient identity matching)
   - Used by health information exchanges (HIEs) and QHINs
   - Provide blueprints for implementation across vendors

   Use Cases Enabled:

   - Cross-organization document sharing (XDS)
   - Master patient indexing (PIX)
   - Medical image exchange

7. **C-CDA (Consolidated Clinical Document Architecture)**

   Overview:

   - A standardized XML-based format for sharing clinical summaries between systems

   Why It Still Works:

   - Legacy but widely deployed across EHRs
   - Required for Meaningful Use and ONC certification
   - Still used in TEFCA-based document exchange via QHINs

   Use Cases Enabled:

   - Discharge summaries, continuity of care documents
   - TEFCA's query/retrieve model (current focus of QHINs)
   - Cross-vendor record sharing

Summary of Working Standards

Standard	Primary Role	Key Strengths
FHIR	Clinical data exchange	Modern, flexible, app-friendly
OAuth 2.0 / OIDC	Secure authorization	Industry standard for access control
SMART on FHIR	App launch/interoperability	Enables standardized 3rd-party apps
X12	Payer-provider transactions	Established, reliable in finance flows
USCDI	Data content consistency	Regulatory baseline for data sharing
IHE Profiles	HIE & identity workflows	Real-world tested for document exchanges
C-CDA	Document-based summary exchange	Ubiquitous in TEFCA & HIE environments

Ab Initio software supports all these standards, including the ability to automatically generate translation, validation, and data quality assessment for these standards. Ab Initio is also widely used to interoperate among these standards and proprietary formats and protocols within large insurers and other healthcare organizations.

e. What standards are you aware of that are not currently in wide use, but could improve data access and integration?

Several emerging or underutilized health IT standards have the potential to significantly improve data access, integration, and usability — especially in support of patient-centered care, public health, and advanced analytics. While not yet widely adopted, these standards are technically sound and strategically valuable for interoperability in the coming years.

The following is a breakdown of key standards not yet in wide use but with strong potential for future impact:

1. FHIR Bulk Data Access (Flat FHIR / Flat NDJSON)

Overview:

- Enables population-level data export from EHRs or data holders in FHIR format.
- Uses NDJSON (newline-delimited JSON) for high-volume, asynchronous data retrieval.

Why It's Valuable:

- Essential for analytics, machine learning, ACOs, and public health.
- Reduces the need to individually query records for thousands of patients.

Why It's Underused:

- Few EHRs and payers have enabled full support for it, partly due to technical complexity and privacy/security considerations.

Ab Initio supports this variation of the FHIR format; however, there have been no customer requests for implementation to date.

2. FHIR Prior Authorization (Da Vinci CDex, PAS)

Overview:

- Developed under the HL7 Da Vinci Project.
- Standardizes the process for electronic prior authorization (ePA) using FHIR.

Why It's Valuable:

- Reduces delays in care caused by manual, fax-based prior authorizations.
- Enables real-time or near-real-time determinations.

Why It's Underused:

- Payers and providers have been slow to adopt due to integration burdens and variation in local workflows.

Ab Initio supports these FHIR extensions; however, there have been no customer implementations; only proofs of concept have been done to date.

3. FHIR Consent Resource

Overview:

- A standardized way to capture, manage, and share patient consent preferences using FHIR.

Why It's Valuable:

- Supports granular consent (e.g., allow sharing of behavioral health records with PCP but not others).
- Critical for privacy, legal compliance, and patient trust.

Why It's Underused:

- Limited support in EHRs; complex legal and policy variation at state/federal levels.
- Requires better user interface design and identity proofing infrastructure.

Ab Initio supports these FHIR extension; however, there have been no customer requests for implementation to date.

4. FHIR Genomics

Overview:

- A FHIR implementation guide for structured representation of genetic test results and family history data.

Why It's Valuable:

- Enables integration of precision medicine and pharmacogenomics into routine care.
- Facilitates research and clinical trial eligibility.

Why It's Underused:

- Genomic data is often stored in PDFs or proprietary formats.
- Lack of clinical decision support and uncertainty around reimbursement.

Ab Initio supports these FHIR extensions; however, there have been no customer requests for implementation to date.

5. HL7 Gravity Project Standards for Social Determinants of Health (SDOH)

Overview:

- Defines FHIR-based coding and exchange of SDOH data (e.g., housing insecurity, food access).

Why It's Valuable:

- Enables standardized screening, documentation, and referrals across platforms.
- Supports care coordination with social service organizations.

Why It's Underused:

- Still emerging; most EHRs and health plans don’t yet fully support structured SDOH capture.
- Community organizations lack interoperability infrastructure.

Ab Initio supports these FHIR extensions; however, there have been no customer requests for implementation to date.

6. mCODE (Minimal Common Oncology Data Elements)

Overview:

- FHIR-based standard for capturing and sharing cancer data (diagnosis, treatment, response).

Why It's Valuable:

- Facilitates longitudinal oncology research, clinical trials, and survivorship care.
- Backed by major institutions (e.g., ASCO, NCI, MITRE).

Why It's Underused:

- Limited vendor support.
- Requires oncology-specific configuration and clinician engagement.

Ab Initio supports these FHIR extensions; however, there have been no customer requests for implementation to date.

7. UDAP (Unified Data Access Profiles)

Overview:

- A security and trust framework layered on top of FHIR/OAuth to support **dynamic client registration, authentication, and attestation.**

Why It's Valuable:

- Improves trust between apps and data holders without relying on static whitelists.
- Supports scalable, patient-mediated app access models (e.g., TEFCA Individual Access Services).

Why It's Underused:

- Technical maturity is recent; infrastructure to manage trusted endpoints is still developing.

While Ab Initio has capabilities to support this standard, there have been no customer requests for implementation to date.

8. IHE/HL7 Patient Identity Matching Standards (PIXm, PDQm)

Overview:

- Standards for cross-system patient identity resolution and query.

Why It's Valuable:

- Essential for linking records across systems, especially in national exchange networks (e.g., TEFCA QHINs, HIEs).
- Improves data quality and safety.

Why It's Underused:

- Patient matching still largely relies on proprietary or probabilistic approaches.
- Widespread implementation requires policy standardization and technical infrastructure.

Ab Initio supports these standards through our Co>Relate product and service offerings.

Summary Table

Standard	Purpose	Reason for Low Adoption	Impact if Adopted Widely
FHIR Bulk Data Access	Population-level exports	Technical and privacy hurdles	Enables scalable analytics
FHIR Prior Authorization	Streamlined coverage decisions	Integration complexity	Faster care, lower admin burden
FHIR Consent Resource	Granular patient consent	Legal, UI, and tooling gaps	Trustworthy, patient-centered sharing
FHIR Genomics	Precision medicine data exchange	Format and workflow limitations	Advanced personalized care
Gravity SDOH	Standardized social data	Infrastructure immaturity	Addresses health equity
mCODE	Oncology data interoperability	Niche scope, EHR adoption	Better cancer tracking and research
UDAP	Secure app trust framework	Newness, limited tooling	Safer, scalable app ecosystem
PIXm/PDQm	Patient identity reconciliation	Policy, adoption inconsistency	Accurate longitudinal records

f. Are there redundant standards, protocols, or channels that should be consolidated?

The U.S. health IT ecosystem includes several redundant or overlapping standards, protocols, and exchange channels that, if consolidated or harmonized, could improve efficiency, reduce administrative burden, and enhance the usability of health information. These redundancies often stem from the legacy layering of standards, diverse regulatory mandates, and parallel innovation in the public and private sectors.

Here's a detailed breakdown of where consolidation or rationalization is most needed:

1. C-CDA vs. FHIR for Clinical Data Exchange

The Redundancy:

- C-CDA (Consolidated Clinical Document Architecture) is a legacy XML-based format used for document-level summaries (e.g., discharge summaries, CCDs).
- FHIR is a modern, API-driven standard for accessing granular clinical data (e.g., meds, labs, allergies).

Why It's Redundant:

- Many data holders must support both for different use cases (e.g., TEFCA QHIN exchange uses C-CDA; patient-facing APIs use FHIR).
- Maintains two parallel development and compliance efforts.

Consolidation Opportunity:

- Transition TEFCA and clinical networks to FHIR-based exchange (e.g., FHIR documents or resources) over time.
- Encourage bidirectional support in EHRs with a roadmap for phasing out standalone C-CDA reliance.

2. Direct Secure Messaging vs. Query-Based Exchange

The Redundancy:

- Direct Messaging (via DirectTrust) uses secure email-like protocols for sending clinical documents point-to-point.
- Query-Based Exchange (via HIEs, TEFCA, or Carequality/CommonWell) allows real-time record lookup and retrieval.

Why It's Redundant:

- Both are used for provider-to-provider exchange, but are often implemented side-by-side without coordination.
- Direct lacks scalability for longitudinal data access; query networks are more flexible but fragmented.

Consolidation Opportunity:

- Limit Direct use to referrals or push notifications, and migrate clinical record access to networked query-based models.
- Encourage HIEs and TEFCA QHINs to support unified query-push hybrid models using FHIR.

3. X12 Transactions vs. FHIR for Administrative Exchange

The Redundancy:

- X12 EDI transactions (e.g., 270/271 for eligibility, 278 for prior auth) are the standard for payer-provider exchange.
- FHIR and Da Vinci Implementation Guides offer modern, real-time APIs for the same workflows.

Why It's Redundant:

- Providers and payers must support both formats, duplicating integration and maintenance efforts.
- FHIR offers richer context and better developer tools but lacks universal support.

Consolidation Opportunity:

- Phase in FHIR-based admin exchange (Da Vinci) as the next-gen replacement for X12, with CMS and commercial payer incentives.
- Use translators or intermediaries to ease migration while minimizing disruption.

Ab Initio offers a metadata-driven approach to translating between these two transaction ensembles. Ab Initio can offer a temporary translator until underlying systems generate FHIR natively.

4. Multiple Consent Management Models

The Redundancy:

- Patient consent is managed differently across:
    - EHR portals (via native forms)
    - State HIEs (varied opt-in/opt-out policies)
    - Research platforms (eConsent)
    - FHIR Consent Resource (emerging)

Why It's Redundant:

- Lack of standardization creates friction for patients and developers.
- Leads to inconsistent enforcement and gaps in data sharing.

Consolidation Opportunity:

- Adopt the FHIR Consent Resource as the national standard.
- Harmonize privacy policies across states with federal alignment (e.g., TEFCA, 21st Century Cures).

Ab Initio supports each of these consent models and a business rules environment for interchanging among them. This can be quickly adapted to migrating from one consent management model to another.

5. Parallel National Exchange Frameworks (TEFCA, Carequality, eHealth Exchange, CommonWell)

The Redundancy:

- Each network supports provider-to-provider exchange using similar standards (e.g., C-CDA, IHE profiles), but does not universally interoperate.
- Leads to "network of networks" silos and onboarding duplication.

Why It's Redundant:

- Providers and vendors must join multiple networks to achieve complete connectivity.
- Fragmentation creates gaps in record access, especially for patients.

Consolidation Opportunity:

- TEFCA can serve as the unifying umbrella if participation is made attractive and inclusive.
- Encourage convergence via aligned governance, incentives, and technical roadmaps.

Strategic Summary

Redundant Areas	Consolidation Approach	Benefit
C-CDA vs. FHIR	Transition to FHIR-based documents	Modernization, granularity, app-friendly
Direct vs. Query-based	Prioritize query-based exchange via TEFCA/HIEs	Real-time, scalable access
X12 vs. FHIR (admin)	Promote Da Vinci FHIR APIs, use translators as bridge	Simplified payer-provider data flow
Consent Models	Standardize on FHIR Consent + national policy alignment	Streamlined patient control
Multiple Exchange Networks	Use TEFCA QHINs as central fabric for unification	Fewer onboarding burdens, broader reach

g. Are there adequate alternatives outside of TEFCA for achieving widespread patient access to their health information?

While there are several alternatives to TEFCA that currently support patient access to health information, and in some cases, offer broader or faster routes to access than TEFCA — particularly in its current early stage of rollout, these alternatives face their own limitations, and none offer the scale, trust framework, or governance alignment that TEFCA aims to establish.

The following is a breakdown of the main non-TEFCA pathways, how well they work, and where gaps remain.

1. SMART on FHIR APIs (Under ONC's 21st Century Cures Act Rule)

What It Is:

- All certified EHR systems must support FHIR APIs with patient access via apps.
- Patients can authorize third-party applications (e.g., Apple Health, MyChart, OneRecord) to access their clinical records.

How It Helps:

- Allows real-time, digital access to USCDI-compliant data (e.g., meds, problems, labs).
- Scalable across major EHR vendors (Epic, Cerner, Allscripts, etc.).

Limitations:

- Data scope is often narrow (limited to what's in the EHR).
- Access requires patient portal accounts and identity verification per institution.
- Not well-integrated across different provider systems (fragmented access).

2. CMS Blue Button 2.0 (Medicare Claims Access)

What It Is:

- An API that allows Medicare beneficiaries to access Part A, B, and D claims data and share it with apps.

How It Helps:

- Offers longitudinal, cost-based data across many providers, especially for patients with traditional Medicare.
- Supports use cases like cost transparency, medication management, and provider comparison.

Limitations:

- Does not include Medicare Advantage (Part C), Medicaid, or commercial plans.
- Data is claims-only — no clinical context (e.g., labs, vitals).
- Time lag: claims data is typically 3–6 months delayed.

3. Private Health Information Networks (e.g., Carequality, CommonWell, eHealth Exchange)

What They Are:

- Nationwide networks that connect EHRs and providers to exchange patient health information (mostly C-CDA-based).

How They Help:

- Allow record location and retrieval across providers.
- Some support individual access services (IAS), such as CommonWell's patient portal integration.

Limitations:

- Primarily provider-to-provider exchange; individual access is not always implemented.
- Require patient registration with each network or member organization.
- Lack of centralized governance or policy like TEFCA provides.

4. Consumer Health Apps and Aggregators

What They Are:

- Apps like Apple Health, Health Gorilla, OneRecord, and Medfusion that pull data from multiple EHRs or claims APIs.

How They Help:

- Offer aggregated health records in a user-friendly interface.
- Some integrate with wearable devices and remote monitoring tools.

Limitations:

- Data availability depends on which systems the patient has connected.
- App developers must maintain multiple API integrations and work around inconsistent data formats.

5. HIPAA Right of Access

What It Is:

- Patients have a legal right under HIPAA to request copies of their medical records from any covered entity.

How It Helps:

- Works for any provider or payer, even those not using digital APIs.
- Can be used to request images, PDFs, notes, and other file types.

Limitations:

- Often manual and paper-based: fax, email, mailed CDs.
- Delays and denials are common.
- No standard format; hard to reuse or aggregate data.

How Do These Compare to TEFCA?

Capability	TEFCA (QHINs)	SMART on FHIR	Blue Button 2.0	Private Networks	HIPAA Access
National interoperability	☑ (emerging)	⊘ (institutional)	☑ (Medicare only)	☑ (for providers)	⊘ (manual process)
Longitudinal record access	☑ (across orgs)	⊘ (fragmented)	☑ (claims only)	☑ (limited clinical)	☑ (but unstructured)
Real-time access	⊘ (batch/query model)	☑ (real-time)	⊘ (delayed)	⊘ (varies)	⊘ (slow process)
Patient-directed exchange	☑ (via IAS)	☑	☑	⊘ (provider-focused)	☑
Governance and trust policy	☑ (federated agreement)	⊘	☑ (CMS-governed)	⊘	☑ (HIPAA-bound)

Summary

While these alternatives to TEFCA exist and currently enable meaningful patient access:

- FHIR APIs (via ONC rules) are the most scalable, real-time option for clinical data.
- Blue Button 2.0 offers historical claims for Medicare beneficiaries.
- App-based aggregators are the most user-friendly but face fragmentation challenges.

These alternatives are fragmented, inconsistent, and lack the unified policy and data-sharing trust fabric that TEFCA promises.

TEFCA's value is not just technical — it's organizational and legal, offering a single "on-ramp" for patients to access comprehensive, cross-system health data through trusted, certified networks (QHINs).

PC-11. How are health information exchanges (HIEs) currently helping to advance patient access to health information in the real world?

Health Information Exchanges (HIEs) are playing a critical role in advancing patient access to health information in the real world — especially in cases where patients receive care from multiple providers across different organizations, EHR systems, or regions. While HIEs were originally created to facilitate provider-to-provider data exchange, many are now expanding their services and infrastructure to support patient access more directly.

How HIEs Advance Patient Access Today

1. Consolidated Longitudinal Health Records

- HIEs aggregate data from multiple providers and care settings, creating a more complete record than what any single provider can offer.
- These records often include: clinical notes, labs, radiology reports, medications, allergies, and diagnoses.

Impact: Patients gain access to comprehensive health histories that improve chronic disease management, care coordination, and understanding of past treatments.

Example: The Indiana Health Information Exchange (IHIE) offers a patient-facing app called "HealthDart" that connects patients to their complete health history across the network.

2. Patient Portals and Direct Access Tools

- Some HIEs provide dedicated patient portals or connect to existing ones (e.g., via providers or insurers).
- Patients can log in to:
    - View lab results
    - Download visit summaries
    - Track immunizations or prescriptions

Impact: Improves patient engagement and empowers individuals to make informed health decisions.

Example: CRISP (Maryland's HIE) offers a patient data access tool through MyHealth portal, available to residents across the state.

3. Support for Caregivers and Proxies

- HIEs increasingly offer mechanisms for authorized caregivers to access patient data, such as:
    - Parents accessing pediatric records
    - Adult children supporting aging parents

Impact: Enhances continuity of care and shared decision-making, especially in complex or elder care scenarios.

4. Facilitating Individual Access Services (IAS) Under TEFCA

- Some HIEs are preparing to serve as Designated Gateways or participants under TEFCA, implementing Individual Access Services that allow:
    - Patients to request and retrieve records via TEFCA-aligned apps or services.
    - Support for FHIR-based data exchange with standardized patient identity matching.

Impact: HIEs will serve as central enablers for national-scale patient access once TEFCA is fully operational.

5. Reducing Information Silos and Redundant Testing

- By integrating data from various systems and making it accessible to patients, HIEs help:
    - Prevent redundant lab/imaging orders.
    - Reduce medical errors due to incomplete medication histories.
    - Facilitate more informed second opinions.

Impact: Improves care efficiency and safety, with measurable cost savings and better outcomes.

Real-World Enablers and HIE Tools

HIE	State/Region	Patient Access Tools	Highlights
CRISP	Maryland, D.C.	MyHealth Portal	HIE-integrated patient access with behavioral health, labs, and encounters.
IHIE	Indiana	HealthDart App	Aggregated longitudinal records from over 100 hospitals.
Manifest MedEx	California	ConnectMyData	FHIR-enabled data sharing with payers and patients.
NC HealthConnex	North Carolina	State portal (NCID-based)	Integrates with Medicaid and state services for holistic patient view.

Limitations and Barriers

Despite these successes, HIE-driven patient access still faces several challenges:

Not All HIEs Offer Direct Patient Portals

- Many focus primarily on provider-centric exchange and lack the funding or mandate to build patient tools.

Variable Data Quality and Completeness

- Participation in HIEs by providers is not universal, especially among:
    - Behavioral health
    - Long-term/post-acute care
    - Independent physician practices

Inconsistent Consent and Identity Matching Models

- Fragmented privacy laws and technical approaches lead to:
    - Complex onboarding for patients
    - Occasional mismatches or missing records

Limited Inter-HIE Exchange

- Patients who receive care across state lines or in multiple HIE regions may still experience data gaps.

Summary

Health Information Exchanges are advancing patient access by:

- Aggregating multi-provider clinical data into comprehensive records
- Offering or supporting patient-facing portals and identity-based access tools
- Preparing to serve as infrastructure for national access via TEFCA
- Supporting caregivers and shared access models

While progress varies by region, well-funded, policy-aligned HIEs are proving to be valuable partners in the shift toward equitable, accessible, patient-centered data exchange.

a. How valuable, available, and accurate do you find the data they share to be?

1. Value of HIE Data

High Value (when fully leveraged)

HIEs aggregate data from a diverse array of sources — including hospitals, clinics, labs, pharmacies, and public health entities — which enables:

- **Longitudinal Patient Records**: Patients' clinical histories across multiple providers in one place.
- **Care Coordination**: Critical for transitions of care, chronic disease management, and emergency response.
- **Public Health Surveillance**: Syndromic surveillance, disease registries, immunization tracking.
- **Reducing Redundancy**: Prevents duplicate tests and procedures, reducing costs and patient burden.

In value-based care and ACOs, HIE data supports population health management, risk stratification, and performance measurement.

2. Availability of HIE Data

Variable Availability (regionally and by source type)

Strengths:

- Hospitals and large health systems are most likely to participate and contribute robust data.
- Many HIEs have state mandates or incentives that boost participation (e.g., North Carolina, Maryland, Indiana).
- Growing integration with labs, imaging centers, and Medicaid agencies.

Gaps:

- Behavioral health, long-term/post-acute care (LTPAC), and social care organizations often have low participation due to:
    - Privacy regulations (e.g., 42 CFR Part 2)
    - Lack of technical infrastructure or incentives
- Small independent providers and rural clinics may not be consistently connected.
- Cross-state HIE interoperability remains limited despite efforts like eHealth Exchange or TEFCA.

As a result, a patient's record in an HIE may be partially complete — rich in hospital encounters but missing community or specialty data.

3. Accuracy and Quality of HIE Data

Generally Reliable—but with Caveats

Strengths:

- Structured data (e.g., labs, diagnoses, medications) is typically sourced from certified EHRs and lab systems, offering high reliability.
- HIEs often clean, normalize, and deduplicate data using patient matching and standard terminologies (e.g., LOINC, SNOMED).

Challenges:

- Variability in coding and data granularity:
    - Different providers may use inconsistent terminologies.
    - Some fields (e.g., social history, problem lists) may be incomplete or out of date.
- Clinical notes and unstructured data may be present but not easily consumable by downstream systems or apps.
- Patient identity matching can introduce false positives/negatives if master patient index (MPI) algorithms are not robust.

Accuracy is typically better than payer claims (which lag and lack clinical detail), but less controlled than in a single-source EHR.

b. What changes would you suggest?

Recommendations for Optimizing HIE Data Use

- Pair HIE data with EHR or payer data to fill in gaps and validate completeness.
- Use Natural Language Processing (NLP) to extract insights from unstructured notes where structured fields are missing.
- Advocate for state or regional incentives to connect behavioral and long-term care providers.
- Leverage FHIR-based access models (where supported) for more scalable and modern integration.

c. Are there particular examples of high-performing HIE models that you believe should be propagated across markets?

There are several high-performing HIE models in the United States that stand out for their scope, governance, technical infrastructure, patient services, and measurable impact. These HIEs offer replicable models that other regions and stakeholders can learn from or emulate.

Below are four exemplary HIEs — each demonstrating specific strengths that are scalable across different markets:

1. CRISP (Chesapeake Regional Information System for our Patients)

Region: Maryland, Washington D.C., West Virginia, and select mid-Atlantic states
Model Strength: *State-mandated integration, robust infrastructure, and patient services*

Notable Features:

- Mandatory provider participation in Maryland enhances data completeness.
- Real-time encounter notification service (ENS) widely used for transitions of care.
- Offers patient portal access through MyHealth, and supports TEFCA Individual Access Services (IAS) preparation.
- Integrated with public health efforts (e.g., COVID reporting, opioid alerts).
- Participates in value-based care networks and Medicaid coordination.

Why Propagate:

- Strong state-level governance and funding
- Close alignment between public health, Medicaid, and providers
- Operational maturity and modular technical offerings (e.g., CRISP Shared Services used by other states)

2. Indiana Health Information Exchange (IHIE)

Region: Indiana and surrounding states
Model Strength: *Longevity, large clinical footprint, and data-driven tools*

Notable Features:

- One of the oldest and largest HIEs in the U.S., dating back to 2004.
- Aggregates data from over 100 hospitals and 18,000 providers.
- Offers HealthDart, a FHIR-based app integrated with the Epic EHR, allowing clinicians to see longitudinal patient data inside their workflows.
- Strong analytics and reporting capabilities used by payers and public health agencies.

Why Propagate:

- Demonstrated success in embedding HIE data in EHR workflows
- Comprehensive data normalization and deduplication practices
- Sustainability model through partnerships and value-added services

3. Manifest MedEx (California)

Region: California
Model Strength: *Public-private collaboration and integration of clinical plus claims data*

Notable Features:

- Connects over 100 hospitals, 900 ambulatory providers, and major health plans.
- Unique in offering combined clinical and claims records, enhancing longitudinal insights.
- Offers tools like MX Notify (event notifications) and MX Access (unified health records).
- Actively supports statewide quality improvement and population health efforts.

Why Propagate:

- Successful integration of payer and provider data (a rare and powerful model).
- Focus on value-based care support for ACOs and Medi-Cal (Medicaid) providers.
- Scalable FHIR-based data services and TEFCA readiness.

4. Healthix (New York City and Long Island)

Region: New York Metro
Model Strength: *Density, patient matching, and real-time alerts*

Notable Features:

- Covers 20+ million patients, making it one of the largest HIEs in the U.S.
- Sophisticated MPI (Master Patient Index) and probabilistic matching engine.
- Provides real-time alerts to EDs, care managers, and primary care providers.
- Integrates with public health departments and housing/social services for whole-person care.

Why Propagate:

- Scales well in high-density urban environments
- Effective in cross-sector collaboration for social determinants of health (SDOH)
- Use of interoperable platforms to serve large and diverse populations

Common Success Factors to Emulate

Success Factor	Description
Mandated or incentivized participation	Ensures broad and complete data coverage.
Integrated services with public health	Aligns with state goals and improves care coordination.
Patient-facing capabilities	Portals, APIs, or TEFCA IAS support for direct access.
Embedded EHR integration	Brings HIE insights into clinical workflows (not just external portals).
Mixed revenue models	Sustainability through both payer/provider contributions and public grants.

Strategic Recommendations for Other Markets

- States or regions building HIE capacity should look to models like CRISP and IHIE for governance and scale.
- Payer-provider partnerships, like Manifest MedEx, should be encouraged to improve data richness and VBC readiness.
- Emphasize workflow integration and alerting services to drive HIE usage beyond passive data exchange.
- Invest in patient-matching and consent tools to enhance trust and reduce errors.

d. What is the ongoing role of HIEs amidst other entities facilitating data exchange and broader frameworks for data exchange (for example, vendor health information networks, TEFCA, private exchange networks, etc.)?

The ongoing role of HIEs is evolving — not diminishing — in the context of broader national frameworks and private exchange ecosystems such as TEFCA, vendor-based networks (e.g., Carequality, CommonWell, Epic Nexus), and payer-provider platforms. Rather than becoming obsolete, high-functioning HIEs are being redefined as regional and domain-specific intermediaries that add unique value beyond generalized data exchange.

Here's a detailed look at the ongoing and future role of HIEs amidst this expanding health data ecosystem:

1. HIEs as Regional Connectors and Aggregators

Role:

HIEs continue to serve as regional hubs for clinical data aggregation, pulling together EHR, lab, pharmacy, behavioral health, public health, and community data from entities not fully connected to national or vendor networks.

Why It Matters:

- Many small practices, FQHCs, behavioral health, and public health agencies still lack the infrastructure or incentive to join TEFCA or large national networks directly.
- HIEs are trusted, localized partners with deep relationships and policy alignment at the state and community level.

Think of HIEs as "on-ramps" for under-connected providers and a way to ensure that regional variation is reflected in national exchange.

2. HIEs as TEFCA Intermediaries and Service Providers

Role:

HIEs are being positioned as Participants, Subparticipants, or even QHINs within TEFCA.

Why It Matters:

- TEFCA enables federated, nationwide exchange, but depends on trusted, local partners to onboard smaller entities and support patient access.
- HIEs can offer services on behalf of providers that may not want or be able to directly integrate with a QHIN.

Example: Some HIEs are preparing to serve as Designated Gateways or Individual Access Service (IAS) providers under TEFCA, extending its reach into hard-to-connect corners of the healthcare system.

3. Value-Added Services Beyond Basic Exchange

Role:

HIEs increasingly provide analytics, alerting, care coordination, social services integration, and public health support — services that go well beyond "pipes and plumbing."

Why It Matters:

- National networks like TEFCA or Carequality focus on interoperability standards and query/retrieve, but don't handle:
    - Real-time encounter notifications
    - Patient attribution and risk stratification
    - Integration with SDOH networks
- HIEs fill in these value-based care support roles, often with state or payer alignment.

In Maryland, CRISP delivers event notifications and analytics tools for Medicaid and value-based care programs — services not offered by QHINs or vendor networks.

4. Public Health Infrastructure

Role:

HIEs are increasingly essential for biosurveillance, public health reporting, immunization registry integration, and pandemic response.

Why It Matters:

- HIEs are deeply embedded with state health departments, unlike national networks.
- During COVID-19, HIEs were first responders in reporting, contact tracing, and vaccination tracking.

This public utility role has prompted federal agencies to consider more formal partnerships and funding channels to sustain HIE operations as public infrastructure.

5. Bridging Vendor and Private Networks

Role:

HIEs often act as translators or gateways between systems that don't natively interoperate — such as Epic and non-Epic systems, or payer and provider networks.

Why It Matters:

- National networks like Carequality and CommonWell are vendor-centric and not always inclusive of every data source or smaller vendor.
- HIEs can create cross-network mappings and patient matching to fill these gaps.

For example, an HIE can broker data exchange between a community mental health provider on a niche EHR and a major hospital on Epic.

Summary: The Evolving Role of HIEs

Role	Function	Unique Contribution
Regional aggregator	Local clinical and community data exchange	Connects underserved, non-hospital providers
TEFCA intermediary	Participant/Subparticipant to national QHINs	Extends TEFCA's reach to hard-to-serve sectors
Value-added services provider	Alerts, analytics, care coordination	Beyond-document exchange, aligned with VBC
Public health partner	Reporting, surveillance, immunizations	Infrastructure for state and federal response
Cross-network integrator	Bridges vendor and payer networks	Seamless patient identity and record linkage

Future Outlook

- HIEs will increasingly transition from data switchboards to care enablement platforms.
- Many will offer shared services across state lines, acting as regional infrastructure operators under TEFCA.
- Those that thrive will integrate FHIR APIs, support real-time services, and align with value-based care and equity goals.

PC-12. What are the most valuable operational health data use cases for patients and caregivers that, if addressed, would create more efficient care navigation or eliminate barriers to competition among providers or both?

a. ***Examples may include the following:***

   (1) Binding cost estimates for pre-defined periods.

   (2) Viewing provider schedule availability.

   (3) Using third-party apps for appointment management.

   (4) Accessing patient-facing quality metrics.

   (5) Finding the right provider for specific healthcare needs.

b. ***What use cases are possible today?***

c. ***What should be possible in the near future?***

d. ***What would be very valuable but may be very hard to achieve?***

Patients and caregivers benefit most from easy access to key health information like medication lists, lab results, visit summaries, and claims records – data that is often readily available through patient portals or Medicare's Blue Button 2.0 API. However, some high-value data remains difficult to obtain. For example, detailed clinical notes, imaging files, operative reports, or real-time cost and scheduling information can be hard for patients to gather electronically due to siloed systems and limited interoperability. Best practices in healthcare data management call for integrating these disparate sources through open standards (like HL7 FHIR APIs) and data-sharing frameworks so patients can see a comprehensive, unified health record. In practice, this means breaking down barriers between clinical EHR data, claims data, and other sources (e.g., social determinants or wearable data) and making them securely accessible in one place.

Ab Initio's Relevant Capabilities:

Ab Initio's platform is designed to eliminate data silos and integrate multiple healthcare data sources into a single cohesive view. The platform can ingest and combine structured clinical data (EHR records, lab results, etc.), claims files, unstructured notes, and even streaming data, thanks to a unified processing engine that supports batch, real-time, and distributed processing. Through its data virtualization and cataloging, Ab Initio enables flexible yet governed access to data across systems – for instance, linking a patient's Medicare claims with their provider's EHR data and personal health device data.

These integration capabilities align with CMS's goals to expand Blue Button and similar APIs: Ab Initio can quickly incorporate additional CMS datasets or new data types into an API, making more information (like provider notes or pricing details) available to patients. The platform's strong emphasis

on data quality and metadata means that as data is integrated, it's also validated and tagged (for example, labeling data sources and timestamps), which is critical for meaningful use by patients and caregivers.

In short, Ab Initio provides the robust data integration backbone needed for patients to seamlessly access all their health information in one place, supporting better self-care and informed decision-making.

Another aspect of "Data Access and Integration" is ensuring that once data is aggregated, patients can actually use it. Industry best practices recommend user-friendly apps and standards-based APIs so that third-party developers can build innovative patient-facing tools. CMS's Blue Button 2.0 is a starting point – it offers basic demographics and Medicare claims – but stakeholders see opportunity to include more data, such as Medicare Advantage claims, Medicaid data, or clinical data from health information exchanges, to provide a fuller picture. The challenges to accessing these today include technical barriers (different formats and systems), policy restrictions, and patients not knowing these tools exist.

Overcoming these requires a combination of interoperability standards (FHIR, USCDI data classes) and patient education. CMS and ONC can also encourage integration by supporting frameworks like the TEFCA, which aims to network together various health data sources. For example, TEFCA could significantly improve patient access by enabling one-stop connections to multiple health networks – letting a patient retrieve records from all their providers through a single authorized query. Early use cases suggest TEFCA and similar networks can reduce the manual effort patients face in collecting records, though participants have suggested expanding certain use cases and improving how patient identity is managed for even greater impact.

Ab Initio directly supports these best practices by providing a secure API layer on top of integrated data. The platform can expose consolidated patient data through RESTful APIs, and it supports industry standards (for example, Ab Initio services can be registered via an OpenAPI/Swagger specification for easy discovery and management). This makes it straightforward for approved third-party apps or portals to fetch patient data in real-time once proper consent is given.

Moreover, Ab Initio's emphasis on governance and security ensures that sensitive health information is protected even as we improve access. The platform includes end-to-end encryption, granular access controls, and audit logging out-of-the-box. That means when a caregiver uses an app to pull a loved one's records, Ab Initio can guarantee that each data request is authenticated, authorized, and recorded – aligning with HIPAA and CMS privacy requirements.

Finally, Ab Initio's proven scalability and reliability in mission-critical environments means it can handle the high volumes (10s and 100s millions of beneficiaries, decades of claims) and uptime demands of CMS-scale solutions. This reliability is crucial if CMS expands Blue Button or other patient APIs; patients and caregivers must trust that their data is complete and available when needed. By leveraging Ab Initio, CMS and its partners can confidently broaden the scope of patient-accessible data (to include claims, clinical, and beyond) and integrate new sources, knowing the platform will maintain performance, data integrity, and security at scale.

C. Providers

2. Data Exchange

PR-5. Which of the following FHIR APIs and capabilities do you already support or utilize in your provider organization's systems, directly or through an intermediary? For each, describe the transaction model, use case, whether you use individual queries or bulk transactions, and any constraints:

Effective data exchange for providers centers on adopting common FHIR-based APIs and standards that allow health records to flow between systems with minimal friction. Many provider organizations have made progress here, implementing interfaces like the CMS-mandated Patient Access API (enabling patients to retrieve their records) and starting to use the Bulk FHIR export for population health or quality reporting. Providers also increasingly support SMART on FHIR apps – both embedded in their EHR and standalone – to extend functionality while keeping data secure.

However, gaps remain. Not all providers have enabled newer APIs such as Prior Authorization APIs or real-time Provider-to-Provider exchange via FHIR, often due to resource constraints or the complexity of upgrading legacy systems. Key challenges include ensuring all data formats are accessible (scanned documents and images as well as structured fields), maintaining data quality during exchange, and handling the consent and privacy considerations for sharing sensitive information. The impact on patient care is significant: when providers can easily share complete, up-to-date data (labs, histories, referrals, etc.), care is safer and more efficient.

Thus, CMS can support providers by incentivizing the use of standardized APIs and data formats, providing implementation guides, and possibly offering shared services like a national FHIR endpoint directory to simplify finding exchange partners.

Ab Initio's Relevant Capabilities

Ab Initio offers powerful tools to help providers meet these data exchange demands. Ab Initio is a complete integration platform that can connect internal EHR databases, external partner systems, and cloud services on one unified foundation.

For example, a hospital using Ab Initio could automatically transform data from its internal format into FHIR resources when responding to an API call. The Ab Initio Data Platform's visual, metadata-driven development model makes it easier to build and maintain these transformations, even as standards evolve.

Ab Initio also supports both individual record queries and bulk data exports with equal reliability. Its linear scalability and high-performance parallel processing mean that whether a provider is responding to one patient's query or exporting an entire population's data for a quality program, the process is fast and does not bog down operational systems. This is critical for minimizing burden on providers' IT: heavy data pulls can be scheduled or executed in the background through Ab Initio's scheduling/orchestration system, reducing impact on clinicians' workflow.

Additionally, Ab Initio's built-in data quality controls and auditing ensure that exchanged data is accurate and traceable. If a provider is sharing information through a network like TEFCA or an HIE, Ab Initio can automatically de-duplicate records, standardize code sets, and log each exchange for compliance. By

using Ab Initio, providers effectively get a "universal adapter" for data exchange – one that speaks legacy and modern protocols, handles FHIR, HL7v2, C-CDA, or any format, and robustly manages the flow so that providers can focus on care rather than IT plumbing.

Ab Initio's AI Assistant also helps data stewards and business analysts with everyday tasks:

· AI Assistant can help author metadata used for the mapping and integration of disparate datasets containing similar concepts (e.g., different ways of representing a claim).

· AI Assistant can suggest improvements to the definitions for business terms, coaching organizations toward alignment with standards.

· AI Assistant can generate information augmented by any steward-relevant information in the Ab Initio governance solution. This includes data quality, profiles, lineage, reference data, and more.

· Beyond an LLM solution, Ab Initio leverages the governance and metadata available to enrich every interaction with an LLM with context from business terms, data profiles, data lineage, and more.

Ab Initio Services can extend these functions at the customer site, if desired, so that the AI Assistant can reach out to any source of information accessible inside or outside of the organization.

AI agents can monitor partner publications to be informed of upcoming changes to interfaces and proactively create updated interfaces, leveraging the data exchange history and the published changes.

PR-6. Is TEFCA currently helping to advance provider access to health information?

At this early stage, TEFCA's potential is promising – it aims to connect providers nationwide through Qualified Health Information Networks, reducing the need for one-off data sharing agreements. Some providers are beginning to see benefits, like easier access to outside records in emergencies or when patients switch care settings. Nonetheless, feedback suggests TEFCA's full impact is not yet realized; providers recommend clarifying use cases and ensuring TEFCA doesn't duplicate existing exchange pathways.

Outside of TEFCA, many providers still rely on regional HIEs, direct messaging, or vendor-specific networks.

What changes would you suggest?

CMS could help by aligning TEFCA participation with incentive programs and by working to consolidate redundant standards or channels – for instance, encouraging migration from older point-to-point interfaces to the unified TEFCA approach where feasible.

PR-7. What strategies can CMS implement to support providers in making high-quality, timely, and comprehensive healthcare data available for interoperability in the digital product ecosystem? How can the burden of increasing data availability and sharing be mitigated for providers? Are there ways that workflows or metrics that providers are already motivated to optimize for that could be reused for, or combined with, efforts needed to support interoperability?

Best practices here include automation and workflow integration: providers will share more data if it's automatically collected and sent as part of their routine (e.g., pulling EHR data for quality reporting can double as fulfilling an API request) rather than an extra task. CMS might expand on programs like Data at

the Point of Care or provide tools to auto-populate information, thus leveraging what providers already do (clinical documentation, quality measurement) to serve interoperability goals.

PR-8. What are ways CMS or partners can help with simplifying clinical quality data responsibilities of providers?

a. ***What would be the benefits and downsides of using Bulk FHIR data exports from EHRs to CMS to simplify clinical quality data submissions? Can CMS reduce the burden on providers by performing quality metrics calculations leveraging Bulk FHIR data exports?***

b. ***In what ways can the interoperability and quality reporting responsibilities of providers be consolidated so investments can be dually purposed?***

c. ***Are there requirements CMS should consider for data registries to support digital quality measurement in a more efficient manner? Are there requirements CMS should consider for data registries that would support access to real-time quality data for healthcare providers to inform clinical care in addition to simplifying reporting processes?***

Ab Initio's Relevant Capabilities

Ab Initio squarely addresses provider needs for efficient, low-burden data sharing. Its automation features allow health systems to set up data feeds once and reuse them for multiple purposes. For example, a hospital could use a single Ab Initio data pipeline to both report electronic clinical quality measures and to update a longitudinal patient record for care coordination – reducing duplicate effort.

Ab Initio's exception handling and monitoring further ease the burden: if a data exchange fails (due to a network issue or a data error), the platform can catch it, alert the right staff, and even retry or reroute automatically, so providers don't have to manually troubleshoot every issue.

In the context of TEFCA, Ab Initio can serve as a bridge to QHIN networks, handling the technical heavy lifting of connecting to the network, packaging data according to TEFCA's profiles, and parsing incoming data. This means even providers with older systems can participate in nationwide exchange by leaning on Ab Initio as a translator and mediator.

Moreover, by supporting open APIs and standards, Ab Initio ensures that as CMS encourages a shift away from proprietary interfaces, providers on the platform are already prepared – they can publish or consume new FHIR API endpoints with configuration changes rather than new software.

All these capabilities demonstrate how Ab Initio empowers providers to share data broadly with minimal additional workload, aligning with CMS's interoperability initiatives while preserving the focus on patient care.

3. Digital Identity

PR-9. How might CMS encourage providers to accept digital identity credentials (for example, CLEAR, ID.me, Login.gov) from patients and their partners instead of proprietary logins that need to be tracked for each provider relationship?

a. What would providers need help with to accelerate the transition to a single set of trusted digital identity credentials for the patient to keep track of, instead of one for each provider?

To accelerate acceptance of standard digital identity credentials in healthcare, providers need to see clear benefits and support the transition. A single trusted login (for example, a patient's Login.gov account or another NIST 800-63-3 IAL2 credential) could replace dozens of separate portal accounts, saving patients hassle and improving continuity.

CMS can encourage this by providing guidance and toolkits that help providers integrate federated identity solutions into their portals and EHR systems. For instance, if Medicare or a national trust framework vouches for a patient's identity, a provider could accept that instead of forcing a new signup – but providers may need technical help and reassurance on liability and privacy issues.

One approach is offering pilot programs or incentives for providers who adopt OpenID Connect or SAML-based single sign-on for patient access. CMS might also coordinate with major EHR vendors to embed these capabilities, making it easier for front-line providers to flip the switch.

b. How might CMS balance patient privacy with convenience and access to digital health products and services that may lead to significant improvements in health?

Balancing privacy with convenience is crucial: patients must control who sees their data, even as using one login makes access easier. Clear consent mechanisms and education will be needed so that patients trust a federated identity and providers feel comfortable relying on it.

PR-10. Regarding digital identity credentials (for example, CLEAR, Login.gov, ID.me, other NIST 800-63-3 IAL2/AAL2 CSPs):

a. What are the challenges and benefits for providers?

For providers, the challenges and benefits of moving to federated digital identity are two sides of the same coin. Challenges include the upfront work to integrate new identity services, ensuring all patient-facing systems can handle an external login, and training patients (especially Medicare beneficiaries who may not be tech-savvy) to use a new method. Providers might also worry about what happens if the external identity provider has an outage or if a patient's account is compromised.

On the benefit side, a unified digital identity drastically reduces login fatigue for patients and caregivers – leading to more frequent use of portals and digital tools because one credential opens all doors. It also can improve security; high-assurance credentials (IAL2 means the identity was verified with stringent checks) reduce the risk of fraud compared to the weak passwords patients often reuse. Requiring their use system-wide could improve access by enabling data to follow the patient: with one identity, it's easier to link records from multiple providers and ensure the right data is shared with the right person.

b. How would requiring their use improve access to health information?

In a nationwide provider directory context, if providers also used standardized digital identities, it could streamline how provider information is managed and accessed – for example, a provider's digital identity could be tied to their practice information and FHIR endpoint, simplifying lookup and trust during data exchange. Likewise, combining FHIR resource addresses with identity (essentially attaching a verified identity token to data requests) would likely improve data flow by instantly establishing trust: the receiving system knows the request comes from an authenticated source, which can eliminate steps like manual identity proofing or reliance on less secure credentials.

c. What are the potential downsides?

Potential downsides are that some patients might be left behind (those without the ability or willingness to set up these credentials), and providers could face a transition period with both legacy and new logins to support.

PR-11. How could members of trust communities (3) (for example, QHINs, participants and subparticipants in TEFCA, which requires Identity Assurance Level 2 (IAL2) via Credential Service Providers (CSPs)) better support the goals of reduced provider and patient burden while also enhancing identity management and security?

Ab Initio's Relevant Capabilities

Ab Initio's platform inherently supports the concept of identity-tagged data flows. Every request or data transaction can carry user identity metadata, and Ab Initio can use that to make real-time decisions about data access. For instance, if a provider is part of a trust community (such as a TEFCA QHIN network) that requires IAL2 identities, Ab Initio can accept the network's identity assertions (tokens) and automatically enforce the corresponding security policies on the data pipeline – allowing or denying access, or filtering data, based on who the user is and their verified attributes. All such actions are logged for auditing, which helps providers demonstrate compliance with security requirements.

Moreover, Ab Initio's approach of "develop once, deploy anywhere" applies to security as well – whether the provider's systems run on-premises, in CMS's cloud, or in a hybrid environment, the same identity integration and security model travels with the application.

E. Technology Vendors, Data Providers, and Networks

1. Ecosystem

TD-1. What short term (in the next 2 years) and longer-term steps can CMS take to stimulate developer interest in building digital health products for Medicare beneficiaries and caregivers?

In the broader health tech ecosystem, CMS can take several steps to stimulate developer interest in building digital health products for Medicare beneficiaries. In the short term (next 1–2 years), a key move is to improve access to valuable CMS data: expanding and enhancing APIs like Blue Button 2.0, releasing new datasets (with appropriate privacy safeguards), and ensuring sandbox environments are available for developers to experiment.

Developers are particularly interested in data beyond what's currently offered – for example, incorporating Medicare Advantage claims, provider quality scores, social determinants of health data, or even real-time data feeds (like event notifications) into APIs could spark novel applications.

In the longer term, building a vibrant ecosystem might involve public-private partnerships to support startups (perhaps funding pilot programs or providing technical guidance on CMS data integration) and continued focus on interoperability standards, so that products built for Medicare can easily plug in to provider and patient workflows.

TD-2. Regarding CMS Data, to stimulate developer interest—

a. What additional data would be most valuable if made available through CMS APIs?

When it comes to CMS data, developers value comprehensiveness and ease of integration. The Blue Button 2.0 API currently offers claims and coverage data; adding data like clinical information from EHRs, prescription drug histories, or interoperability with state Medicaid data would greatly increase its utility. Alongside CMS's own data, developers find it useful to combine other sources: for example, wearable device data or patient-generated health data alongside claims gives a fuller picture of patient health.

b. What data sources are most valuable alongside the data available through the Blue Button 2.0 API?

Data from other federal agencies (like CDC public health data or SSA disability data) could also be valuable if made accessible.

c. What obstacles prevent accessing these data sources today?

Today's obstacles include data fragmentation (data sits in silos and isn't all API-enabled), complex onboarding processes for access (slow approvals, technical barriers), and sometimes unclear documentation, which makes it hard to use data effectively. CMS can address these by streamlining API onboarding, improving documentation and support, and prioritizing the release of high-value datasets identified by the community.

d. *What other APIs should CMS and ASTP/ONC consider including in program policies to unleash innovation and support patients and providers?*

Beyond just data availability, additional APIs and services could unleash innovation. For instance, CMS could consider APIs for provider directory information (a nationwide, standardized provider lookup), formularies and price transparency (so apps can help patients estimate costs), or identity verification services (to help apps confidently authenticate Medicare beneficiaries). Another idea is embedding decision support APIs – e.g., allowing apps to tap into CMS's coverage rules or care guidelines. Each new API should follow modern standards (RESTful design, FHIR where applicable) to lower the learning curve for developers.

Ab Initio's Relevant Capabilities

Ab Initio provides an ideal platform to rapidly build and integrate these kinds of solutions. First, Ab Initio software excels at data integration – a core need when combining CMS data with other sources. A developer using Ab Initio can easily pull data from CMS's claims API, an EHR FHIR API, and, say, a social determinants dataset, and join them within a single pipeline. The Ab Initio platform has connectors for a wide range of data sources and formats (from mainframe files to cloud databases to real-time message streams), which means mashing up diverse data becomes a configuration task, not a research project. This is crucial for innovation: a small health IT vendor can use Ab Initio's pre-built components to handle the heavy lifting of data exchange and focus their energy on the unique logic or UI of their product.

Ab Initio also supports an API-first approach. Developers can expose any integrated data pipeline as a secure API endpoint, with support for high-throughput and low-latency requirements. For example, Ab Initio allows publishing of a RESTful service that can handle both synchronous requests (a patient querying their data in an app) and asynchronous workloads (bulk data exports for analytics), all managed consistently. The platform's integration with API management tools (using standards like OpenAPI) makes it easier to govern access, implement rate limiting, and monitor usage – features important for CMS when opening data to many developers and data scientists. In effect, Ab Initio can serve as the backend integration engine for new digital health apps: it ensures data from CMS and other sources is reliably gathered, cleaned, and provided on-demand, so developers can iterate quickly without worrying about building a data infrastructure from scratch.

Moreover, Ab Initio's strengths in data quality, lineage, and governance give confidence when working with critical healthcare information. Developers in the Medicare ecosystem must be mindful of accuracy and privacy. Ab Initio's metadata-driven governance can track where each piece of data came from (claims vs. clinical, etc.) and apply rules – for example, masking identifiers or filtering out sensitive elements if appropriate. This is particularly relevant if CMS provides more sensitive data via API in the future; Ab Initio can help vendors enforce compliance while still innovating.

Finally, as CMS and ONC encourage open standards, Ab Initio is aligned: the platform is agnostic to specific standards and can be quickly updated to support new ones. If a future policy requires a switch to a new API format or the inclusion of new data fields, Ab Initio's flexible architecture means developers can adapt with minimal rework. This future-proof quality is why many large enterprises use Ab Initio for long-term projects – it can adapt as standards and technologies evolve, which is exactly the environment an ecosystem of health tech innovation needs.

2. Digital Identity

TD-3. Regarding digital identity implementation:

a. What are the challenges and benefits?

For companies building health tech solutions, digital identity implementation brings both technical challenges and important benefits.

On the challenge side, vendors must often integrate with external identity proofing services or government credentials, which can be complex. They need to ensure the user experience remains smooth (e.g., redirecting a user to Login.gov and back into their app) and handle new data flows like identity tokens. There's also a trust factor – relying on a third-party identity means ceding some control, and vendors must be confident in the security and uptime of those identity providers.

However, the benefits are substantial: common digital identities mean broader user reach and trust. A Medicare-focused app, for example, could let any beneficiary log in with a familiar credential, rather than forcing new account creation, lowering the barrier to adoption. Security is improved too: high-assurance credentials (like those meeting NIST standards) reduce fraud and help comply with privacy laws by verifying that users are who they claim to be. In the bigger picture, standard digital identity lowers integration costs – if every partner (patients, providers, payers) accepts a token from a known identity provider, data exchange becomes much simpler since you're not mapping and managing multiple login systems.

b. How would requiring digital identity credentials (for example, CLEAR, Login.gov, ID.me, other NIST 800-63-3 IAL2/AAL2 CSPs) impact cybersecurity and data exchange?

Requiring digital identity credentials across the ecosystem would likely bolster cybersecurity and data exchange significantly. From a cybersecurity perspective, a uniform approach (for instance, CMS mandating use of Login.gov or other trusted IdPs for all beneficiary access) ensures that multi-factor authentication and identity proofing are consistently applied. This makes it harder for bad actors to exploit weaker links (since there would be fewer "proprietary" logins with potentially weaker security).

For data exchange, having a common identity layer means that when data moves between systems, the receiving system can trust the attached identity credentials, streamlining authorization. It could, for example, allow automatic data sharing when a patient moves between providers, because the patient can re-authenticate with the same identity and consent to transfer records without setting up new accounts.

c. What impact would mandatory use of the OpenID Connect identity protocol have?

Mandating the OpenID Connect (OIDC) protocol would amplify these effects. OIDC is an industry-standard method for handling authentication and passing identity information, and is already used by major platforms. If all Medicare-related apps and systems used OIDC, it would create a consistent integration pattern – developers could use widely available libraries and services to implement login, rather than custom solutions. This uniformity would speed up development (less time reinventing login flows) and improve interoperability (tokens and identity claims look the same to every system). Essentially, OIDC would act as a common language for identity across the ecosystem.

The impact is largely positive: easier integration, better security with standardized tokens, and improved user experience (single sign-on). The only caveats are that some legacy systems might need updates to support OIDC, and all participants need to handle the tokens carefully (store them securely, check expirations, etc.). Overall, though, an OIDC mandate would likely be welcomed by much of the developer community, since it aligns with modern best practices.

Ab Initio's Relevant Capabilities

Ab Initio has embraced these modern identity standards, which directly helps vendors and data providers adapt to CMS's digital identity goals. The platform's Authorization Gateway supports OAuth2 and OpenID Connect natively. This means that any application or API running on Ab Initio software can use standard OIDC flows: when a user needs to log in, they can be redirected to an external IdP (be it Login.gov, Azure AD, or any OIDC-compliant service) and, upon return, Ab Initio will accept the issued ID token and establish the user's session securely. The heavy lifting of validating tokens, checking signatures, and integrating with identity providers is handled by the platform, so developers don't have to become security protocol experts.

Ab Initio supports integration with third-party identity providers and the concept of identity federation, where data access can be closely tied with a user's identity via token management

Additionally, Ab Initio supports SAML 2.0-based SSO and even older header-based SSO methods, providing flexibility to integrate with whatever identity systems partners use. This is important in a transition period – as CMS encourages OIDC, some partners might still use SAML or enterprise SSO systems; Ab Initio can bridge those by accepting multiple methods simultaneously. Crucially, Ab Initio enables what's sometimes called "identity federation": it can propagate the authenticated user's identity into downstream processes. For example, if an app user is verified via Login.gov, Ab Initio can take that identity context and use it when querying a database or another API, thereby enforcing that data is only retrieved for that specific user. This allows for end-to-end security where data requests carry identity context all the way through, supporting fine-grained access control.

For vendors concerned about implementing these features, Ab Initio essentially provides them out-of-the-box. A developer focusing on a new Medicare app could rely on Ab Initio's platform to manage user authentication and authorization, which accelerates development and ensures compliance with CMS's likely requirements around identity. By using Ab Initio, tech vendors also automatically get robust audit trails of identity-related events – every login, token validation, and data access can be logged and tied to an identity, simplifying security monitoring and reporting.

In short, Ab Initio empowers the ecosystem to adopt strong digital identity practices quickly: it minimizes the effort for integration, maximizes security by adhering to proven standards, and thereby helps fulfill the dual goal of enhanced security and seamless data exchange in CMS's digital health strategy.

3. Technical Standards and Certification

TD-6. What unique interoperability functions does TEFCA perform?

When considering large-scale exchange, TEFCA comes into play. TEFCA is intended to serve unique functions as a federated trust framework – essentially, a "network of networks" for health information exchange across the country. Its value lies in establishing common legal and technical ground rules so that any participant in one network can exchange with participants in another seamlessly. For example, a hospital in Network A could query a clinic in Network B if both are TEFCA participants, something that previously might require separate agreements.

To truly add value, TEFCA should focus on gaps that aren't well addressed today – such as unified patient discovery across networks or standardizing data formats at a national level – and perhaps integrate or streamline the older channels. If there are overlapping standards or protocols (and indeed, healthcare has many), CMS and ONC could work to consolidate efforts, possibly by aligning incentives or certification on a single set of preferred standards.

In summary, TEFCA can be a game-changer if it complements and connects existing exchanges without simply duplicating them.

a. What existing alternatives should be considered?

It's important to evaluate TEFCA alongside existing alternatives. There are already HIEs, DIRECT secure email, Carequality/CommonWell networks, etc., enabling data exchange; stakeholders have pointed out potential redundancies between what TEFCA aims to do and what's already possible.

TD-7. To what degree has USCDI improved interoperability and exchange and what are its limitations?

USCDI has definitely improved baseline interoperability by defining a common set of data elements that most systems now aim to support. Providers and developers know that, at a minimum, things like patient demographics, allergies, medications, and lab results should be shareable. This has standardization benefits and has helped identify where systems need to improve.

a. Does it contain the full extent of data elements you need?

Some stakeholders feel USCDI doesn't cover all the data they need for advanced use cases – for example, social determinants of health or genomic data might not be fully represented in current versions.

b. If not, is it because of limitations in the definition of the USCDI format or the way it is utilized?

c. If so, would adding more data elements to USCDI add value or create scoping challenges? How could such challenges be addressed?

Expanding USCDI could increase data richness, but it also risks making the standard unwieldy or harder to implement.

d. Given improvements in language models, would you prefer a non-proprietary but less structured format that might improve data coverage even if it requires more processing by the receiver?

One suggestion that has emerged is to explore more flexible data-sharing techniques -- for instance, using natural language processing or AI to interpret free-text clinical notes, which could capture data that rigid structured fields might miss. This wouldn't replace USCDI, but augment it, ensuring critical information isn't left out simply because it doesn't fit neatly into a defined field.

TD-8. What are the most effective certification criteria and standards under the ONC Health IT Certification Program?

Many in the industry argue that certification should prioritize what truly advances interoperability – namely, the ability to send, receive, and use data (often via APIs).

The benefit of this approach is agility: smaller or newer technology vendors could certify specific modules or services that excel at one thing (say, a medication history API) without needing to build a full EHR suite, thereby fostering innovation.

TD-9. Regarding certification of health IT:

a. What are the benefits of redefining certification to prioritize API-enabled capabilities over software functionality?

Emphasizing API-driven certification (can the system exchange data for these key use cases?) could encourage vendors to make those capabilities seamless and robust, rather than just ticking boxes for features that might not get used.

b. What would be the drawbacks?

The drawback is you must ensure that core clinical safety and functionality aren't neglected; a narrow focus on APIs shouldn't let vendors skip requirements that ensure the technology is safe and effective in practice. It's a balance – but given how rapidly health IT is evolving, a tilt toward encouraging lightweight, service-oriented solutions (through API-centric criteria) is likely to spur competition and creativity in the ecosystem, which ultimately benefits providers and patients.

4. Data Exchange

TD-12. Should CMS endorse non-CMS data sources and networks, and if so, what criteria or metrics should CMS consider?

A thriving health IT ecosystem depends on open data exchange standards and well-designed infrastructure to support them. CMS can encourage this by favoring open, standards-based APIs over proprietary interfaces in its regulations and programs. This could mean, for example, requiring that any data-sharing funded by CMS (such as a quality reporting interface or a patient service) use HL7 FHIR or other widely adopted standards, and discouraging one-off custom APIs that increase integration costs.

The benefits are clear: open APIs let more developers participate and ensure that different systems can talk to each other without custom bridges. Along with promoting open APIs, maintaining a nationwide provider directory of FHIR endpoints would significantly improve data exchange. Right now, finding the correct electronic address (URL) for a provider's EHR or FHIR server can be a challenge. A unified directory, ideally a publicly accessible one, would act like a phone book for healthcare data – any app or provider could look up where to send data for Dr. X or Clinic Y. Such a directory should be comprehensive and kept up-to-date, and it would likely be most effective if published by a centralized but neutral party (CMS itself or an authorized coordinating entity) with minimal cost or barriers for querying it.

TD-17. Given operational costs, what role should CMS or ASTP/ONC or both have in ensuring viability of healthcare data sharing networks, including enough supply and demand, that results in usage and outcomes?

Ab Initio's Relevant Capabilities

Ab Initio is a strong enabler of this open, scalable data exchange ecosystem. To start, Ab Initio software is built as a fully integrated data platform that replaces the need for multiple specialized tools. This integration means that, whether you need to convert data to FHIR format, call an external API, apply a business rule, or store a lineage record for compliance, it's all done within one environment. Technology vendors and networks find this valuable because they can support a wide range of formats and standards without assembling a patchwork of solutions – Ab Initio provides connectors and transformation components for standard formats and protocols out of the box.

For example, if CMS pushes for consistent FHIR APIs, an Ab Initio user can quickly map internal data structures to the required FHIR JSON schema. If a nationwide provider directory needs to be consumed, Ab Initio can regularly ingest that directory feed and update routing rules in the data flows accordingly. This agility in handling standards ensures that as CMS and ONC update guidelines (like new USCDI versions or API specifications), the vendors using Ab Initio can respond rapidly by adjusting configurations rather than undertaking large development efforts.

Ab Initio's platform is also known for its high performance and reliability, which is crucial for broad data exchange. When you replace proprietary point-to-point interfaces with API calls and network-wide queries, the volume and velocity of data requests can skyrocket. Ab Initio has a proven track record in handling massive data throughput – it's used in industries like finance and telecom for real-time, high-volume processing (e.g., credit card fraud detection and telecommunications call processing). In the healthcare context, this means an Ab Initio-powered solution can manage heavy loads such as bulk FHIR data exports or nationwide queries without failing. Its horizontal and linear scalability allows adding resources to meet demand, and its robust error recovery prevents data loss even if something goes wrong mid-stream.

For a network as ambitious as TEFCA, those attributes are critical: you need an integration engine that can link many systems together reliably. Ab Initio could, for instance, serve at the heart of a QHIN infrastructure, orchestrating queries and responses among participants and performing real-time data transformations or de-duplication as needed.

With respect to data standards and quality (USCDI, etc.), Ab Initio's metadata-driven approach shines. The platform includes a rich data catalog and governance layer, which can store the definitions of data elements (like those in USCDI) and validate exchanged data against them. If USCDI expands or if new standards (like adopting more free-text via NLP) come into play, Ab Initio can incorporate those by updating its metadata and rules – without overhauling the entire system. This flexibility means vendors using Ab Initio can adapt to standards changes faster than those with hard-coded pipelines. For ONC certification needs, Ab Initio can help vendors demonstrate compliance by generating audit reports and lineage that show exactly how data flows and is transformed. If certification shifts to focus on APIs, a vendor can use Ab Initio to implement all required APIs in a consistent, secure manner, potentially reducing the effort to meet certification criteria.

In summary, Ab Initio provides a unified, standards-friendly, and performance-scalable platform that addresses the ecosystem's needs: it lets technology vendors easily adopt open APIs, helps data providers ensure quality and compliance, and gives networks the reliability and flexibility needed for nationwide interoperability. By using Ab Initio, the health tech community can more rapidly achieve the vision behind CMS's RFI – a modern, efficient, and innovation-friendly digital health ecosystem that ultimately delivers better care and less administrative burden.

Customer Stories

The following section provides relevant stories about Ab Initio's experience with healthcare customers.

Case Study 1: Transforming a Government Healthcare Provider's Data Warehouse

Healthcare Data Challenges

Government healthcare organizations operate within a highly complex and fragmented data environment. They struggle with disparate data sources that make integration and consistency difficult, leading to inefficiencies across operations. High operational costs and lengthy development cycles further compound these issues, while rigid, siloed architectures limit scalability and hinder organizational agility. On top of that, stringent regulatory and privacy requirements—especially around the protection of personally identifiable information (PII)—place additional constraints on data handling and system design.

Ab Initio Solution Overview

To address these challenges, Ab Initio implemented a centralized data architecture tailored to the unique needs of government healthcare. This solution seamlessly integrates multiple data sources into a single, unified warehouse, eliminating fragmentation and enabling holistic data access. Data pipelines are enriched, validated, and masked to ensure both high data quality and strict privacy compliance. A centralized metadata layer provides end-to-end transparency and promotes reusability across the ecosystem, reducing duplication of effort. Development cycles are accelerated through just-in-time execution and scalable compute.

Business & Technical Impact

- **50% reduction** in hardware requirements
- **$5.8M annual operational savings** through optimized infrastructure and processes
- **3x faster development cycles**, reducing time-to-insight
- Consolidation of data source into one combined view
- Centralized metadata view of all data sources

Why It Matters

For government healthcare organizations managing sensitive health data at scale, the Ab Initio approach delivers a secure, AI-ready foundation for improving outcomes, reducing costs, and meeting compliance needs—without compromising agility.

Case Study 2: Improving Chronic Care Using Ab Initio

Business Context

A leading US healthcare network faced the notoriously difficult challenge of managing chronic care. Patients often face multiple long-term health conditions, low adherence to treatment plans, and fragmented care coordination. Outdated patient data and disjointed communication across providers further hamper effective intervention and outreach.

Challenges Addressed

- Static and outdated customer data
- Poor care coordination across providers
- Lack of timely, high-quality data
- Limited ability to deliver personalized, proactive outreach

Technology Solution

Ab Initio enabled the healthcare network to streamline chronic care delivery by implementing a high-performance data infrastructure and automation framework. The solution began with a robust data ingestion framework that consolidated inputs from a wide range of sources, creating a unified view of patient information. On top of this foundation, the Ab Initio Business Rules Environment was deployed to encode medical guidelines, enabling automated diagnosis, targeted interventions, and adherence tracking. To close the loop, a monitoring and care recommendation system supported proactive patient outreach and ongoing program optimization, which drove continuous improvement in chronic care outcomes.

Key Capabilities Delivered

The solution delivered several key capabilities that significantly enhanced care delivery. A comprehensive Patient 360 view enabled personalized care planning by integrating all relevant clinical and behavioral data into a single, cohesive profile. High-priority patient identification capabilities surfaced individuals requiring urgent intervention; this allowed care teams to focus resources where they were needed most. Additionally, automated analytics accelerated patient analysis by equipping clinicians with timely insights to guide informed and effective care decisions.

Business Outcomes

- 0.24% increase in Medicare STAR rating
- 83% reduction in patient analysis time
- 2% reduction in chronic care costs
- Improved patient experience via holistic care coordination
- Proactive care by identifying high-priority patients for outreach

Strategic Impact

This initiative shows how Ab Initio can elevate care quality, reduce operational inefficiencies, and support value-based healthcare transformation.

Case Study 3: Optimizing Population Health with Ab Initio

Business Challenge

A leading US healthcare network needed a scalable, data-driven framework to accurately estimate ROI on population health interventions. Key barriers included:

- Incomplete and poor-quality data
- Imprecise cohort identification
- Extended timeframes for outcome measurement
- Disparate definitions of outcomes and success
- Inaccurate cost modeling

Technology Challenges

Legacy infrastructure and fragmented data pipelines created major obstacles for consistent data delivery, high-quality model performance, and real-time evaluation. The organization faced specific limitations, including a lack of data lineage and transparency, the absence of a unified framework for evaluating models across multiple clinical conditions, and minimal governance over the deployment of an AI model. These limitations compromised both operational efficiency and regulatory compliance.

Overview of the Ab Initio Solution

To address these challenges, the team deployed Ab Initio as a high-performance, governed platform designed specifically for clinical ROI modeling and population health optimization. The platform delivered integrated data lineage and quality controls, tracing data from source systems to model input to ensure full auditability and regulatory transparency. Robust pipelines enabled consistent machine learning data delivery, supplying both training and evaluation environments with timely, high-quality datasets. A flexible modeling framework allowed for evaluation across diverse clinical programs, which supported continuous learning and adaptation for multi-condition use cases. Additionally, the governed model lifecycle maintained strict oversight of versioning, accuracy, and decision criteria—critical capabilities for maintaining compliance in regulated healthcare settings.

Results and Business Impact

Ab Initio's platform delivered measurable value:

- **$1.4M annual savings** in clinical program costs
- **6% reduction in care gaps**, improving patient outcomes
- **10% fewer hospitalizations** through proactive interventions
- **Continuous evaluation of SDOH** and clinical risk factors
- **Multi-pronged prevention** using real-time insights across diagnoses, medications, procedures, and more

Strategic Takeaway

This case demonstrates how governed AI and metadata-driven platforms can transform healthcare delivery—enabling faster, more accurate interventions with proven ROI. Ab Initio empowers health organizations to turn fragmented, untrusted data into clinical and financial impact.

Case Study 4: Modernizing Regulatory Data Submission with Ab Initio

Business Imperative

A US health insurer needed to reduce labor effort and human error while ensuring on-time, accurate submission of state-mandated reports aligned with DSG (Data Submission Guidelines) across multiple jurisdictions.

Challenges Faced

- Complex, state-specific regulatory guidelines
- Disparate data sources and fragmented integration
- Lack of standardization and transparency
- Data quality issues (accuracy, timeliness, interoperability)
- Manual rule configuration and inconsistent reporting formats

Ab Initio Solution Overview

To address these challenges, Ab Initio deployed a centralized data architecture specifically designed for the complexities of government healthcare. This architecture unifies disparate data sources into a single, integrated warehouse, eliminating fragmentation and enabling comprehensive access to information. Data pipelines are rigorously enriched, validated, and masked to uphold both data quality and stringent privacy requirements. A centralized metadata layer offers end-to-end visibility and encourages reuse across the ecosystem, minimizing redundant work. Just-in-time execution and scalable compute infrastructure further streamline development cycles; this empowered organizations to adapt quickly to evolving demands while sustaining operational efficiency.

Key Outcomes

The initiative delivered several key outcomes. It significantly reduced compliance risk and minimized submission delays, ensuring more consistent and timely regulatory reporting. Operational costs were lowered through automation, which streamlined processes and reducing manual effort. Trust and transparency improved across reporting workflows; this fostered greater confidence among stakeholders. Finally, the solution established a scalable framework capable of adapting to evolving regulatory demands, thereby supporting long-term sustainability and responsiveness.

Ab Initio's solution empowers healthcare organizations to meet growing regulatory complexity with confidence. It provides a repeatable model for reliable, compliant data operations at scale.

Case Study 5: Improving Data Quality and Timeliness in Healthcare with Ab Initio

Context & Challenges

Healthcare organizations face mounting pressure to:

- Ensure data security and privacy
- Integrate fragmented multi-source systems
- Maintain consistent data quality
- Meet complex regulatory requirements
- Enable real-time access to reliable healthcare data for patient care and decision-making

Traditional architectures struggle with mainframe data latency, manual data quality controls, and compliance complexity. This undermines care delivery and operational agility.

The Ab Initio Solution: Health Insurer Data Quality Streaming

Ab Initio delivered a streaming data quality solution for a leading health insurer, enabling real-time change data capture (CDC) from DB2 and mainframe systems into a unified Customer 360 view. The platform used microservices-based tokenization and streaming to ensure secure, consistent data quality across the enterprise. With sub-second updates, the system supported timely analytics and clinical interventions, which drove faster and more informed decision-making. As part of the engagement, Ab Initio facilitated a full cloud migration to AWS. It completed the transition in approximately six months.

This rapid migration, combined with real-time data capabilities, yielded significant business value. The insurer reduced costs by preventing avoidable readmissions and unnecessary medical procedures. Near real-time data availability improved patient care delivery, while continuous, automated enforcement of data quality standards strengthened the organization’s regulatory compliance posture.

Key Takeaway

Ab Initio enables healthcare payers to modernize legacy systems and power real-time, trusted data access—driving better health outcomes and operational efficiency.

Case Study 6: PBM Eligibility Onboarding with Ab Initio

Context & Challenge

Pharmacy Benefit Management (PBM) eligibility onboarding remains a major operational hurdle for healthcare organizations. Complex eligibility criteria, tight privacy regulations, and fragmented data integration processes hinder accurate and timely data submission.

Key Barriers

Key barriers to efficient PBM onboarding included inconsistent data accuracy and completeness, challenges ensuring regulatory and privacy compliance (particularly HIPAA), delays in onboarding and data processing, and difficulty integrating across a variety of disparate systems.

Technology Solution: The Ab Initio Platform

To address these issues, the organization implemented the Ab Initio platform as a comprehensive technology solution. Ab Initio was chosen for its ability to automate, scale, and enforce governance across the onboarding process—tackling both technical- and compliance-related obstacles.

Several advanced capabilities were deployed as part of the solution. These included scalable ingestion of high-volume eligibility data, automated mapping of complex business rules, and real-time detection and management of data errors and exceptions. Ab Initio also enabled detailed reference data analysis and filtering, while ensuring HIPAA-compliant file generation throughout the process.

Business Impact

- 10x increase in mapping productivity
- 80% reduction in eligibility determination times
- $3.85M saved in extraction-related costs
- All human errors automatically flagged for review

Strategic Takeaway

The AI-ready Ab Initio Data Platform can transform healthcare onboarding workflows by embedding automation, compliance, and scalability at the core—empowering faster, more reliable eligibility processing while reducing operational burden and cost.