

# FHIR® for CMS' Interoperability and Patient Access Rule

This eBook shares the impact of CMS' Interoperability & Patient Access Rule to enable better patient access to their health information, improve interoperability and drive innovation. It further highlights how health plans could leverage HL7's Fast Healthcare Interoperability Resources (FHIR®) to accelerate interoperability, drive member and provider engagement, and simplify the healthcare data sharing experience.

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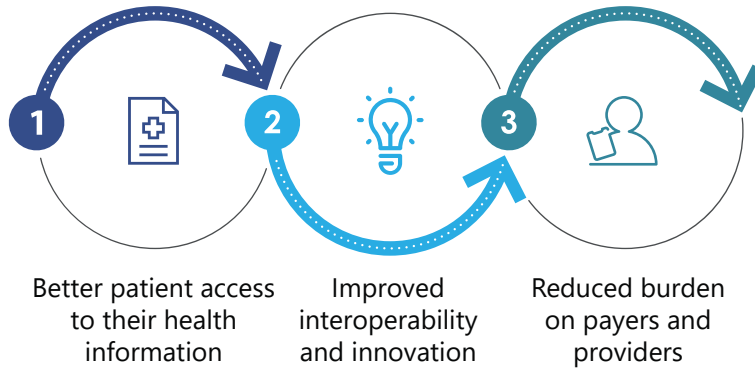
**Chapter 8: Data Ingestion Framework and Data Loader**

# Chapter 1: Impact and Opportunities

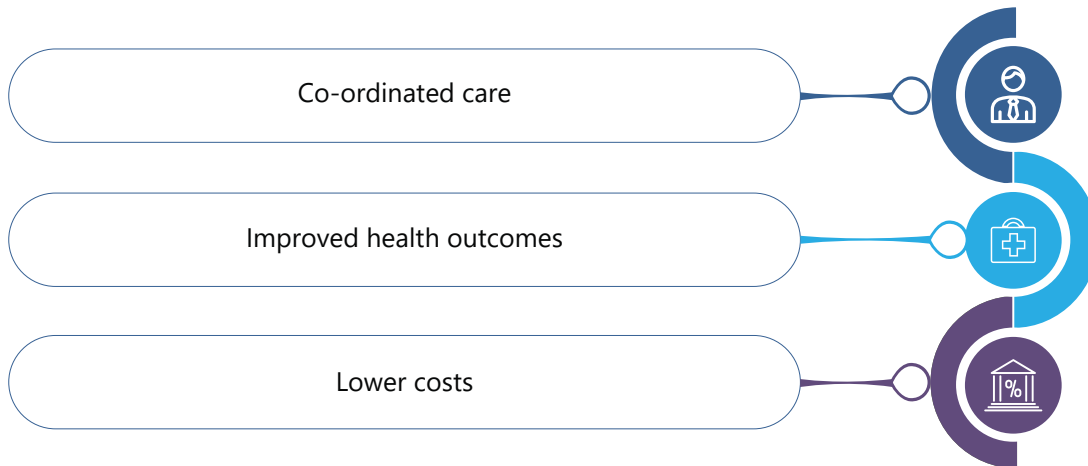
CMS released the new Interoperability & Patient Access Rule in March 2020.

**Objective:** Break down barriers in the health system across the US for better patient engagement

## The rule aimed at:



## Easy availability of data helps achieve



## Rule requirements that will impact payers

### Patient Access APIs

Third-party apps to retrieve data for adjudicated claims, encounter with capitated provisions, remittances, member cost share, clinical lab test result and preferred drug list

### Provider Directory APIs

Maintain provider directory data through APIs with latest updates

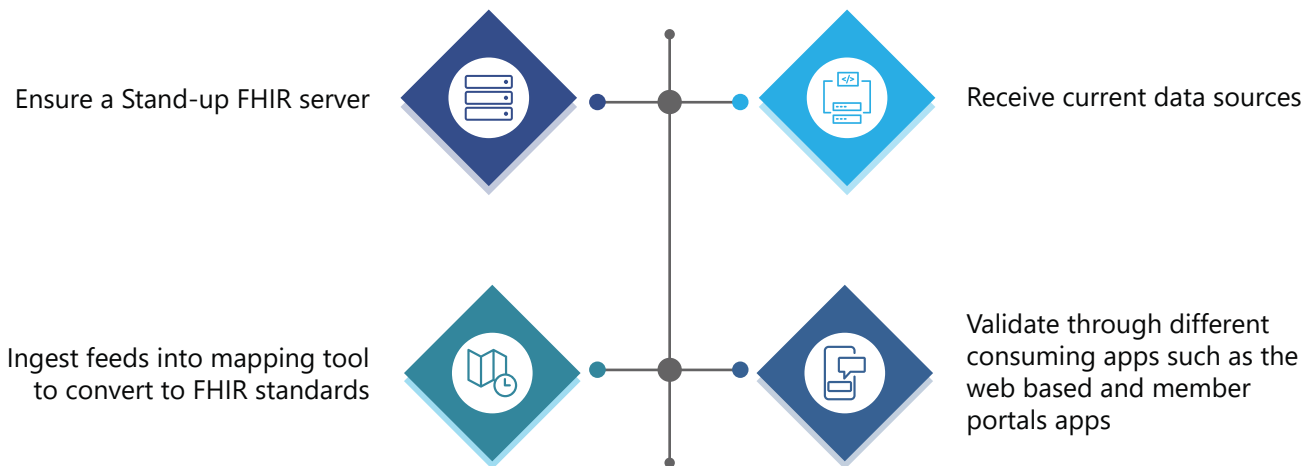
### Payer to Payer Data Exchange

Exchange data set (of up to 5 years) to another plan that currently covers the enrollee

### Enhance the Dual Eligible Experience

Increase the frequency of federal-state data exchanges to daily

## With the new rule, the activities that need completion are:



## Key takeaways



New regulatory trends are enabling members to take charge of their health data and participate in decision making. Payers need to create a FHIR-based ecosystem to comply with these mandates and enable seamless data sharing among stakeholders. CitiusTech's FAST+ solution accelerates payer's FHIR initiatives for faster implementation, speed to market and better provider and member engagement.

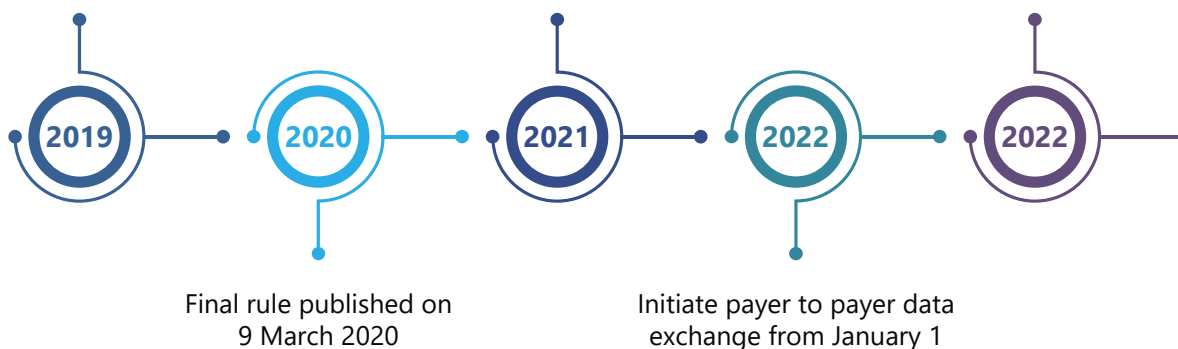


## Timeline for the new rule

Proposed rule announced on 11 February 2019

API implementation for patient access and provider directory from January 1

Increase frequency of federal state exchanges by April 1

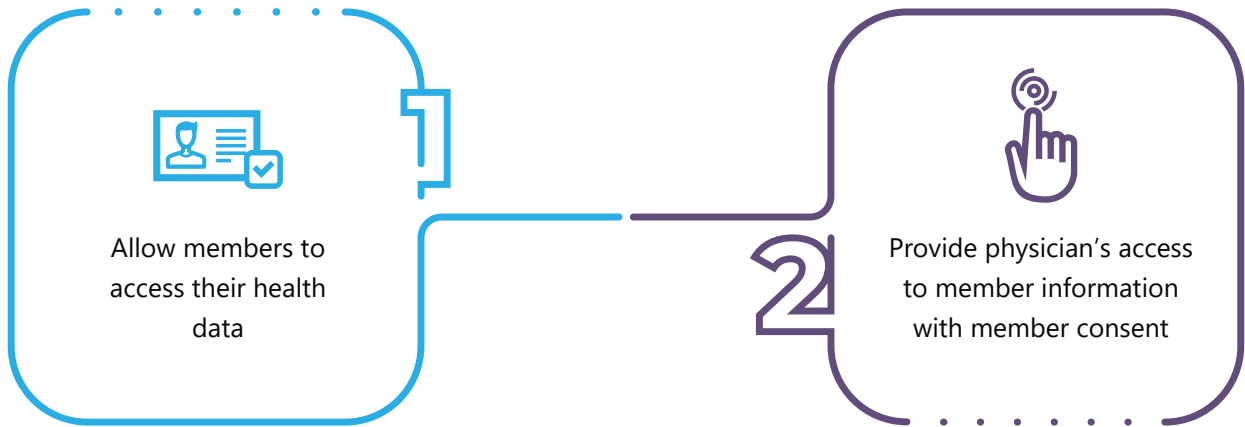


**Future plans:** More advanced data sharing standards to improve healthcare experience with FHIR as a key player

# Chapter 2: Patient Consent on Data Sharing

Compliance with CMS interoperability and patient access rule, maintaining a standard-based API is mandatory for CMS regulated payers in order to share member health data, starting 1<sup>st</sup> January 2021.


**The API should:**




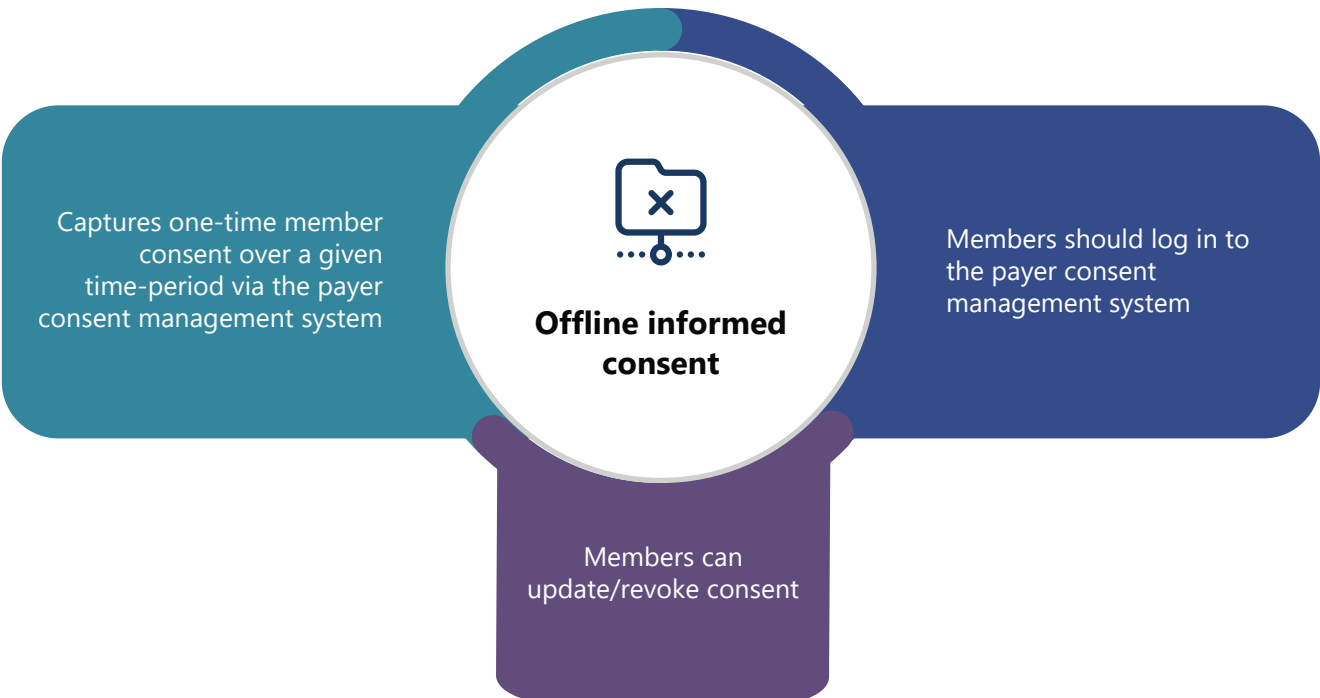
'Consent Management System' is integral to the API infrastructure.

**Objective:** Obtain digital patient consent, while sharing data through a third-party application

**Two major workflow to capture patient consent are:**

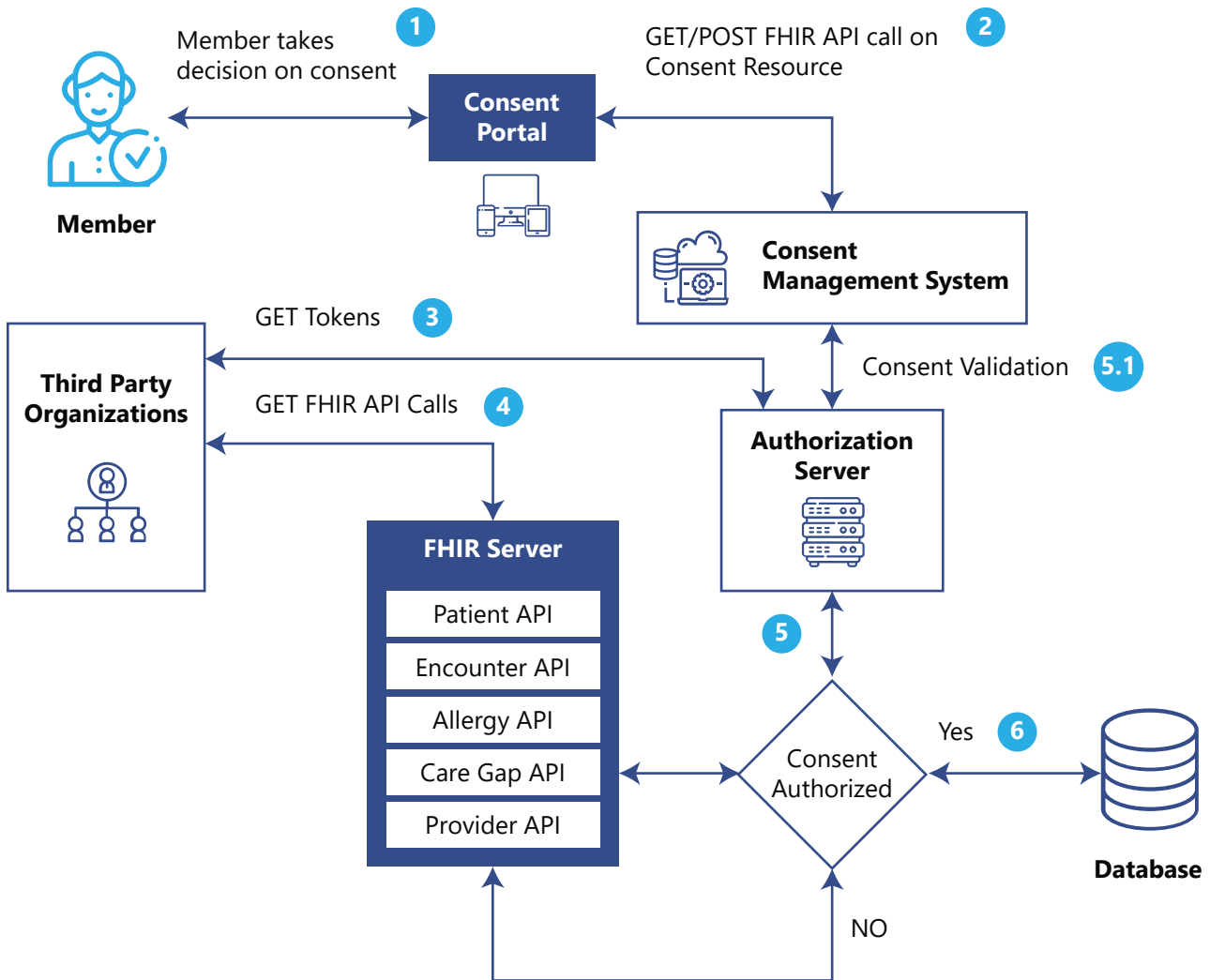
 Offline informed consent

 Consent on-the-go





### Consent Workflow



Workflow showing a typical offline consent signing and data retrieval process by a third-party application

# Chapter 3: Provider Engagement using 'SMART on FHIR' Apps

Access to the right data at the right time by the right individual is crucial for advanced interoperability and modern-day data exchange.

To close this gap, we leverage the 'SMART on FHIR' framework to develop next-gen applications that enable providers with on-demand information exchange with payers and other health systems.

## What is the SMART approach?



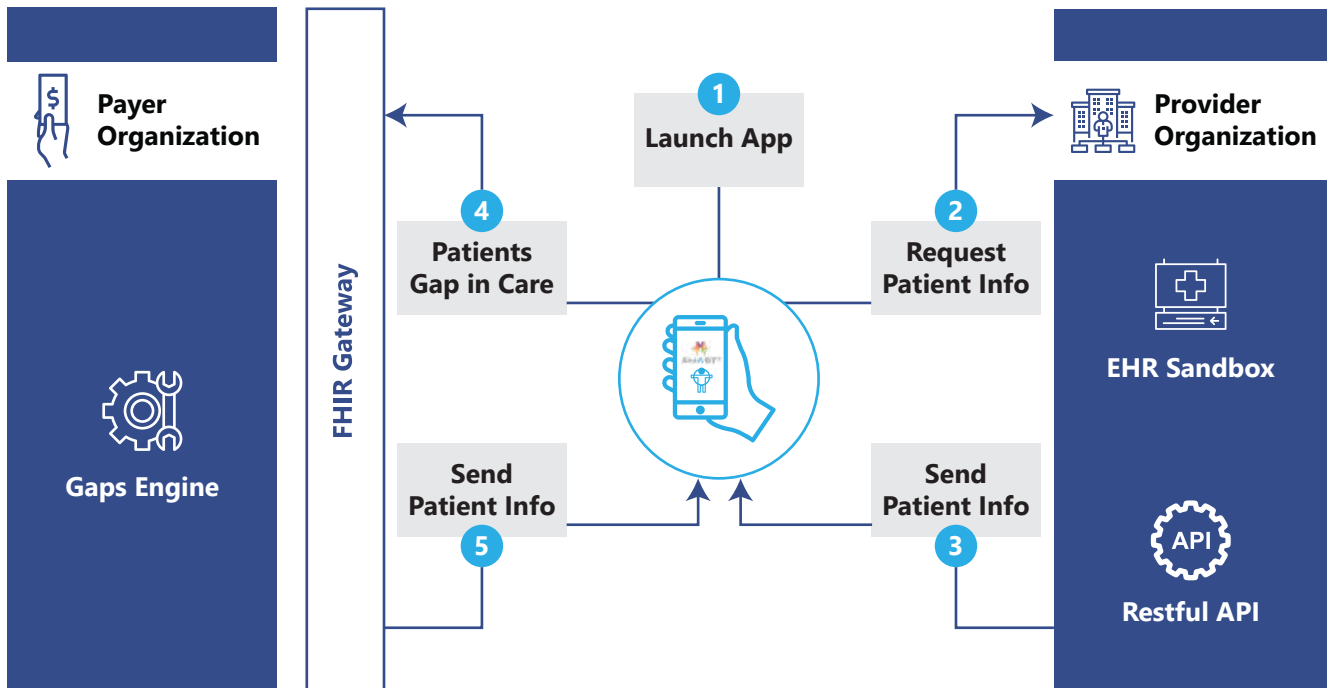
## SMART on FHIR allows:

- Third-party functionality
- Efficient use of EHR data
- Access to discrete clinical data
- Efficient analytics
- Identification of growth opportunities
- Addressing shortfalls in the organization's performance

The CitiusTech's 'SMART on FHIR' app for provider engagement is based on use cases from the Da Vinci project.

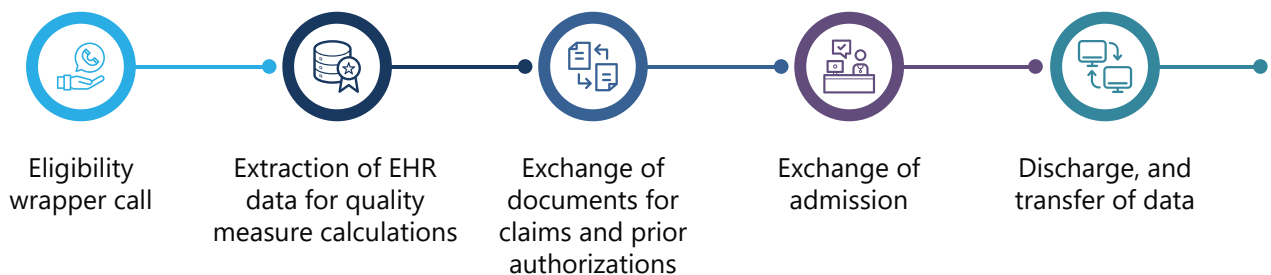
The two most prominent use cases project's prior authorization use case implementation guide are:





A workflow illustrating the use case addressed by CitiusTech's GapFinder 'SMART on FHIR' app.

### Use cases of SMART on FHIR include:



### Key takeaways



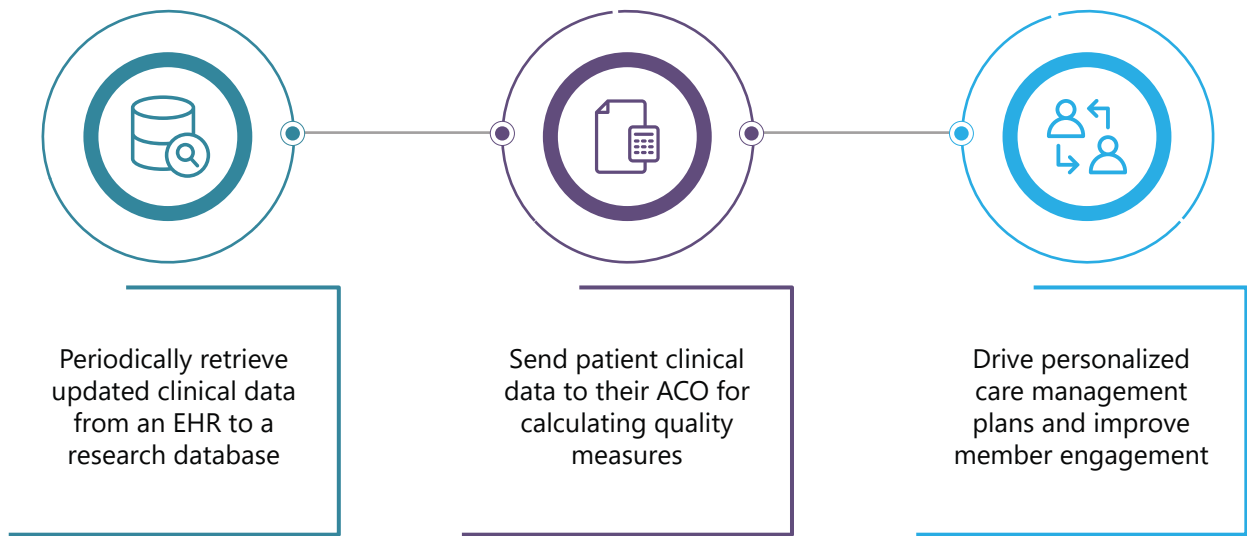
- Implementation of CMS' rule will increase the adoption of interoperability and FHIR
- Payers and providers should proactively invest in 'SMART on FHIR' app to streamline information exchange



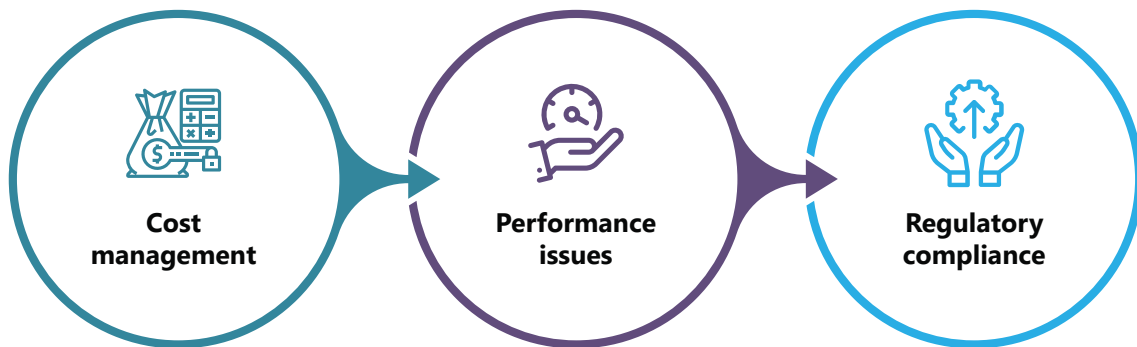


# Chapter 4: FHIR Bulk Data API

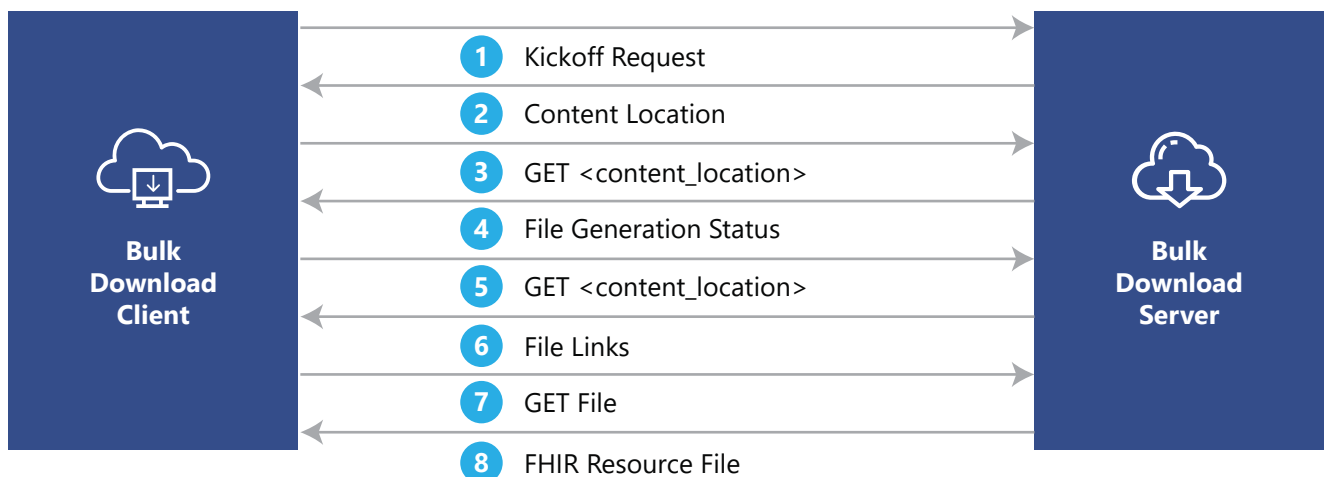
The continuous exchange of enormous volumes of clinical, claims, and administrative datasets calls for efficient access mechanisms to manage bulk volumes of data. The objective is to:



**Bulk data API based on the REST principles optimizes the limitations within a payer’s existing FHIR data model. It addresses:**



Due to the large volumes of data resulting from Bulk API searches, the client does not need to wait for the server to create the extract. It is known as the asynchronous process.



The figure above represents the **FHIR Bulk Data API – Asynchronous Request-Response**

Data sets that uses Bulk Data API Implementation are:




Common clinical data set



Common financial data set

### Benefits of FHIR Bulk Data API

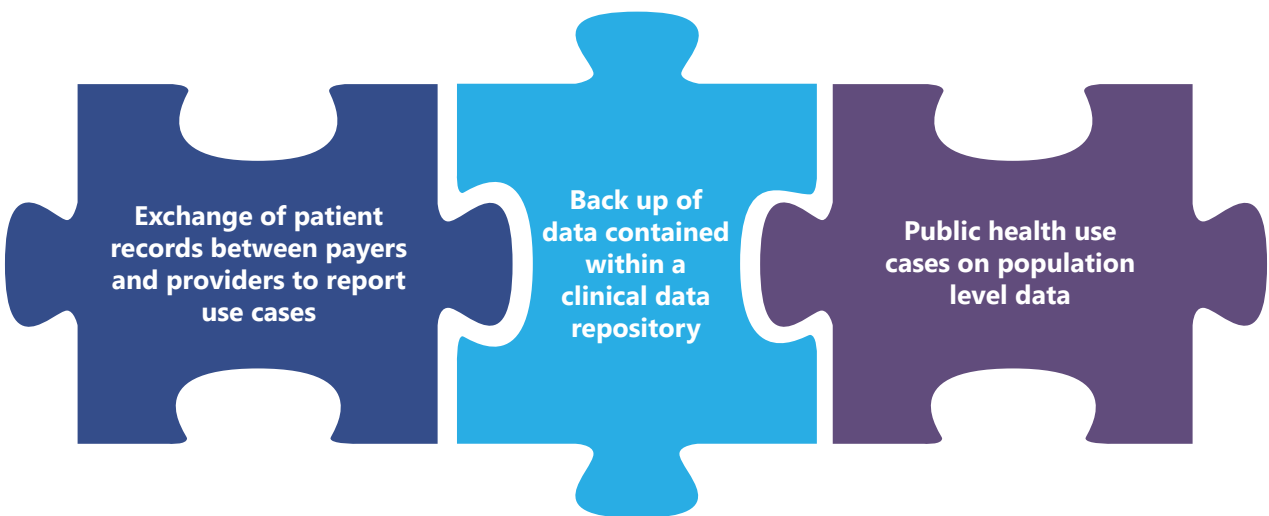


**Transmits large batches of data for the entire population from one system/application to another**



**Facilitates standardized methods for transmitting all health data and reporting**

### Potential applications of FHIR Bulk Data API



# Chapter 5: FHIR Data Repository

The FHIR data repository is an enterprise-level, centralized repository to store healthcare data from external payer systems or physician EHRs.

The diagram below shows the traditional data extraction for any FHIR API request made by third party apps and portals in the backend.



## Advantages of FHIR data repository for payers and PSPs



All API requests are fulfilled by querying and searching data from the FHIR data repository

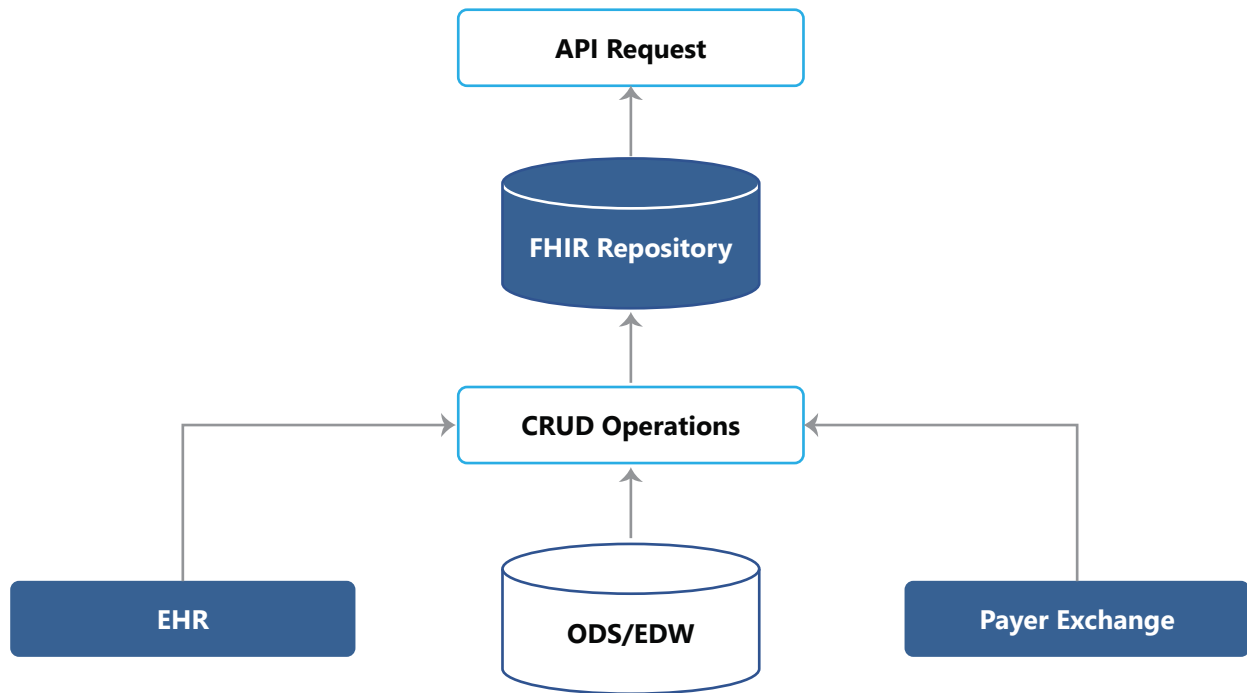


All the external changes from the EHR/ODS/EDW/payer systems are updated in the data repository to ensure the data is in sync with other systems



Addition of text-based searches to the FHIR data repository simplifies complicated use cases and FHIR related searches

CitiusTech has developed a FHIR data repository that queries multiple databases for incoming FHIR data queries. It ensures faster turnaround time and maintains an organization wide FHIR resource repository.

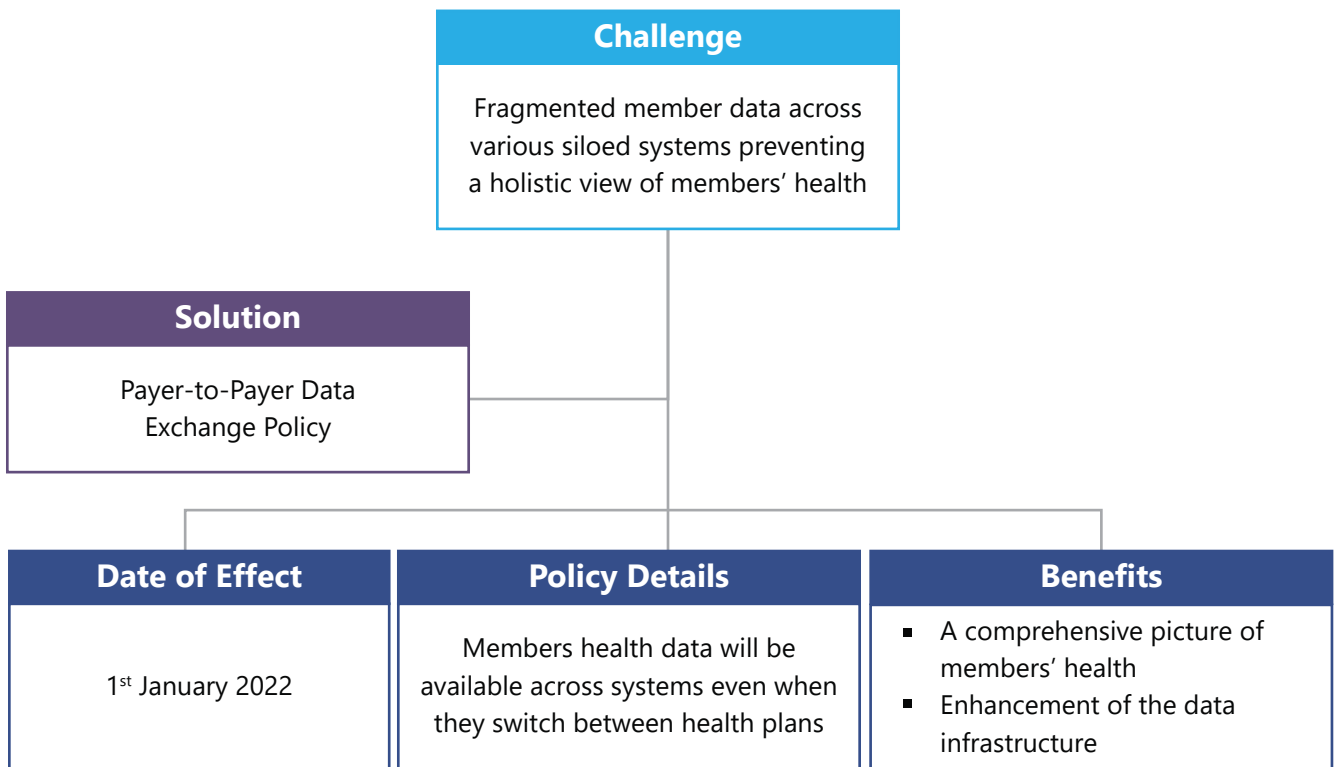


The diagram above represents the CitiusTech developed FHIR data repository

**The key design features of CitiusTech’s FHIR data repository are:**

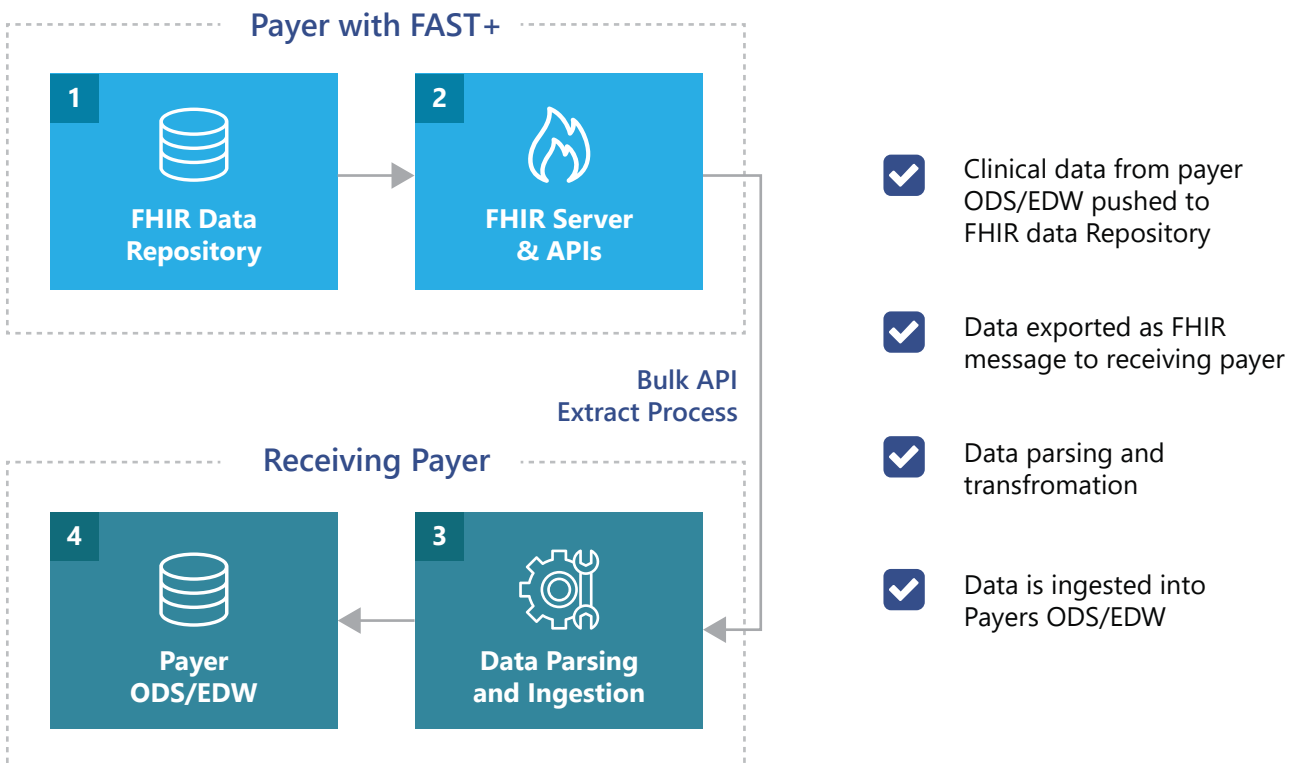
Multitenancy	Data Protection
<ul style="list-style-type: none"> <li>▪ Is multi-tenant and accounts for multiple client datasets</li> <li>▪ Can onboard multiple organizations within the same database and schema using this approach</li> <li>▪ Can be created within the same database to accommodate multiple organizations</li> <li>▪ Creates separate databases for each incoming source</li> </ul>	<ul style="list-style-type: none"> <li>▪ Authenticates the identity of a client</li> <li>▪ Administers Role-Based Access Control (RBAC)</li> <li>▪ Encrypts the storage of FHIR data repository</li> <li>▪ Ensures encryption-in-flight</li> <li>▪ Ensures encryption-at-rest</li> </ul>
<ul style="list-style-type: none"> <li>▪ Can be scaled both vertically and horizontally</li> </ul>	<ul style="list-style-type: none"> <li>▪ Performs complex search operations efficiently</li> </ul>
Scalability	Search/Query Operation

# Chapter 6: Payer to Payer Data Exchange

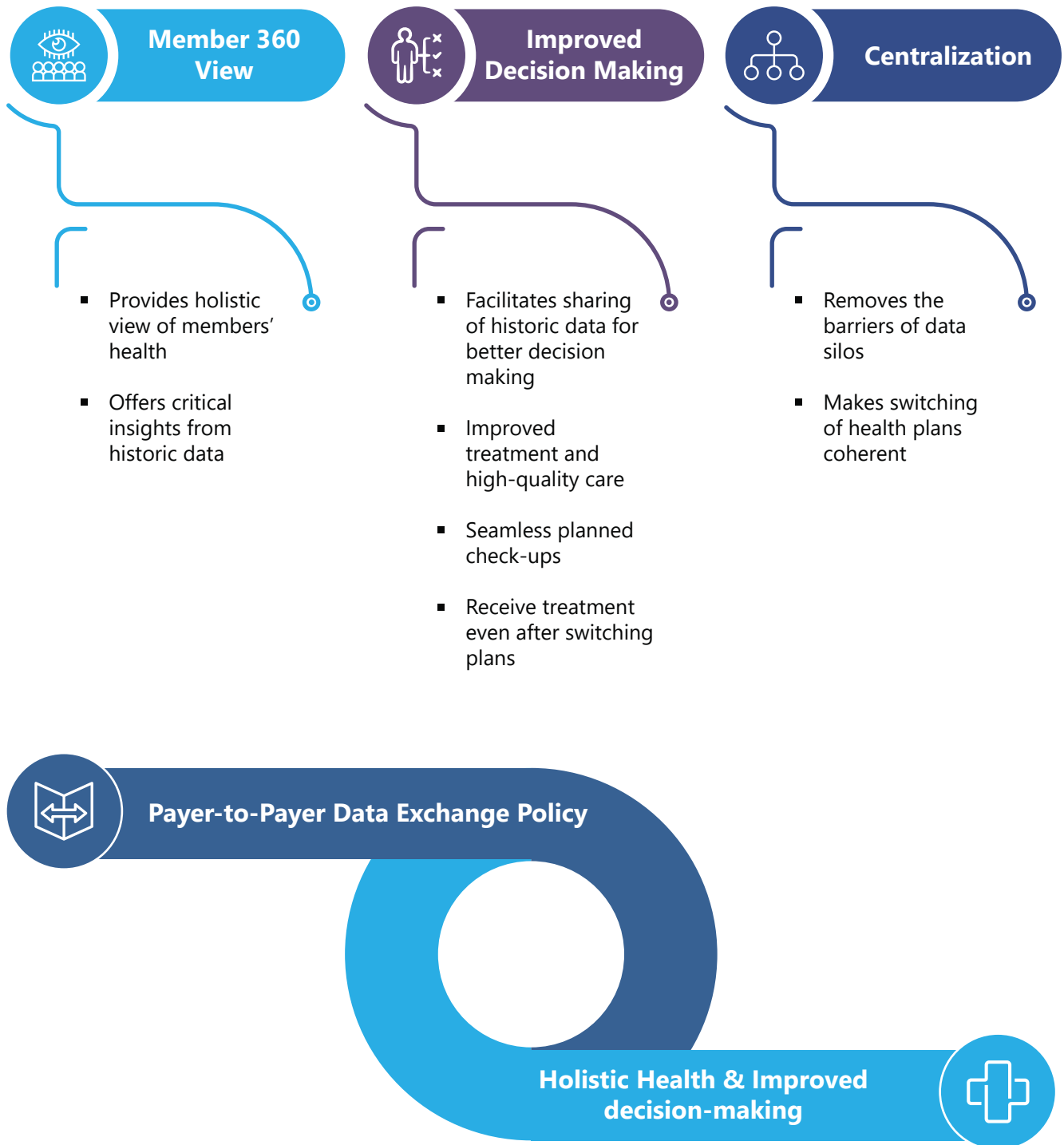


CMS has finalized certain API standards for "Payer-to-Payer Data Exchange". Payers must build and maintain a standard-based FHIR API with necessary authentication and authorization mechanism.

The figure below shows the Payer-to-Payer Data Exchange Workflow



## The key benefits of the Payer-to-Payer Data Exchange Policy

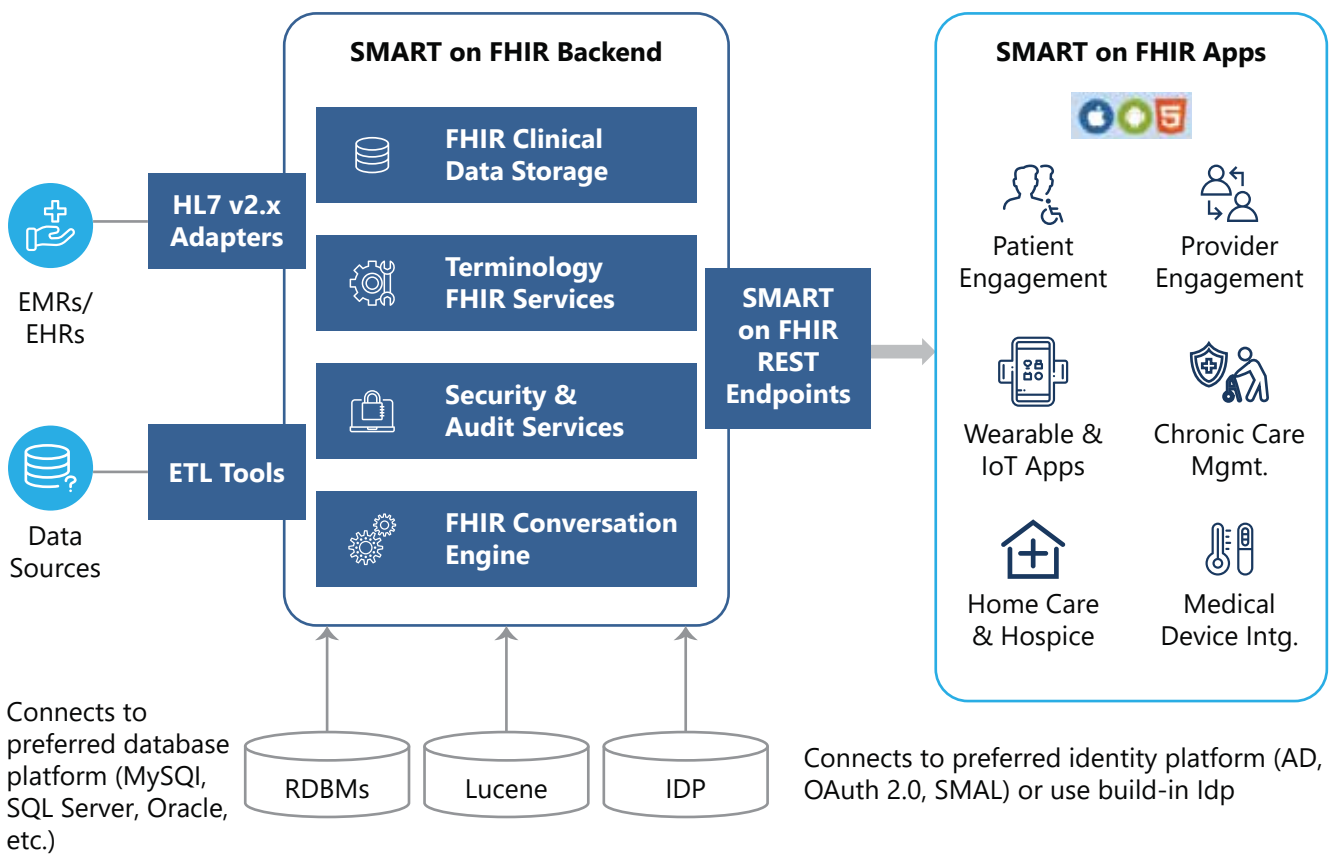


# Chapter 7: SMART on FHIR

New CMS and ONC guidelines under the HHS (Health and Human Services) aim to share more payment and clinical data with patients.

**Objective:** Enable payers to share member information using open data standards, especially Fast Healthcare Interoperability Resources (FHIR)

**Requirement:** Adoption of SMART for FHIR APIs to develop applications and meet the diverse needs of patients, clinicians and other stakeholders in healthcare



- Authentication & Authorization
- Scalability & Performance
- Security
- Extensibility & Reusability
- Analytics

The figure above represents SMART on FHIR Integration with mHealth Applications.

## Five key ingredients to develop a SMART on FHIR mHealth application include:

### Authentication and Authorization

- Ensure Customer Identity and Access Management (CIAM)
- Provide Standard Protocol Support
- Offer API Security
- Allow Identity Analytics (IA)
- Offer Identity Management and Governance (IMG)
- Provide Biometrics Authentication
- Deliver Identity-as-a-Service



### Scalability and Performance

- Enterprise-grade, FHIR-based endpoint for data access and storage in FHIR format
- Free up operational and development resources
- Control data access at scale
- Secure management of Protected Health Data (PHI) in a compliant cloud environment



### Security

- Accept API Gateways to securely communicate with FHIR APIs
- Implement network ACLs and security groups to blacklist IP addresses
- Embrace SSL/TLS protocol for communicating with FHIR backend
- Encryption at rest should be implemented to encrypt data while writing to disk and decrypt during reading



### Extensibility and Reusability

- Explore latest design techniques
- Leverage micro-frontend architecture
- Utilize progressive web apps



### Analytics

- Monitoring in real-time
- Tracing
- Logging API services to track exceptions/errors
- Leveraging advanced techniques such as error correlation and AIOps



**A reliable SMART on FHIR application is critical for patient safety and quality care**



# Chapter 8: Data Ingestion Framework and Data Loader

CMS' Interoperability and Patient Access rule mandates payer-to-payer exchange of member information on member's request. By Jan 1, 2022, payers must be able to ingest member clinical data from other payers.

- Objective:** Enable sharing of member information in the FHIR format
- Requirement:** Payers must be able to load member information from their source of truth into a FHIR data repository
- Outcome:** Facilitate sharing of data with third-party apps/payers via FHIR APIs

**Figure 1**

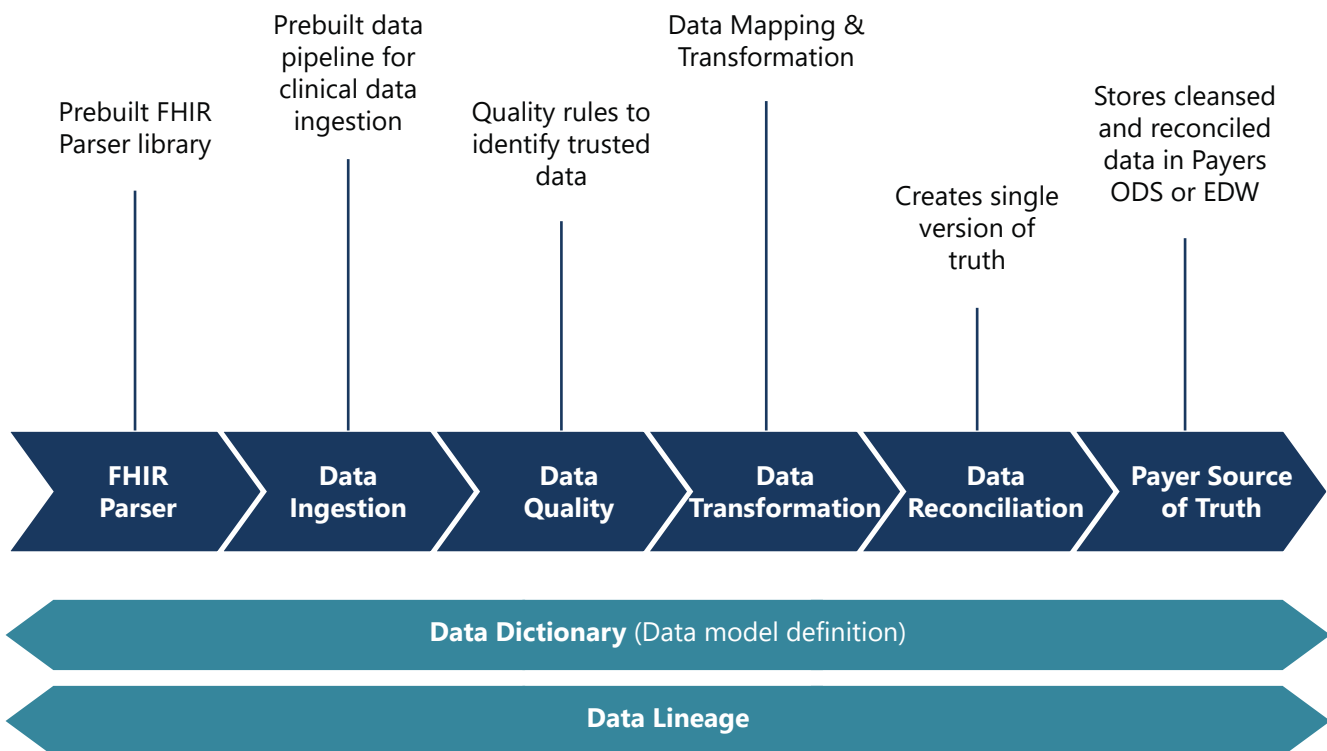
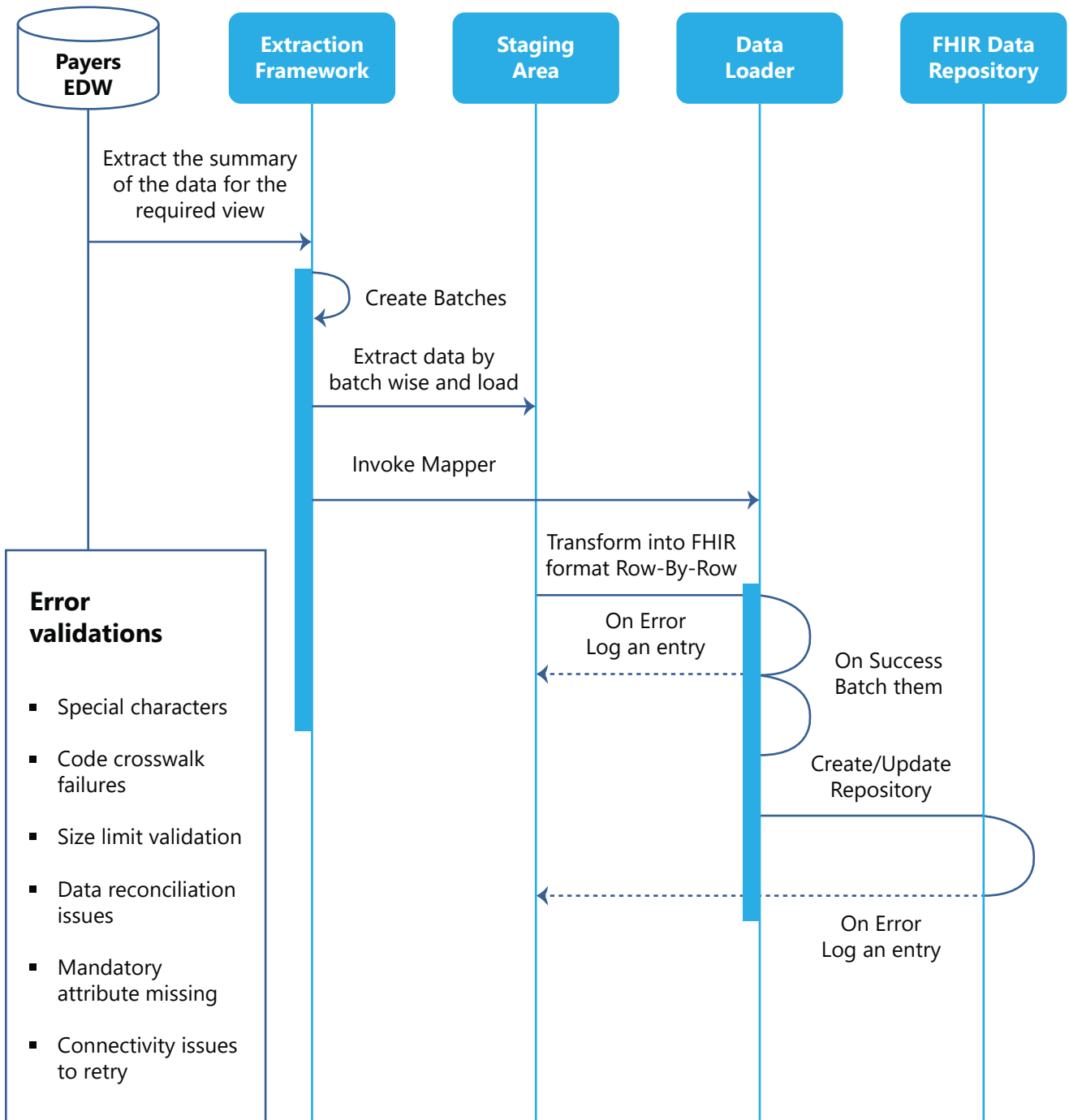


Figure 1 and Figure 2 represents data ingestion and data loader components respectively, which are integral for end-to-end CMS Interoperability rule compliance

The FAST+ solution for CMS rule compliance will enable payer organizations to go live faster and adhere to CMS deadlines

The architecture will enable payer organizations accelerate their transformation journey to next-gen interoperability across their ecosystem

Figure 2





**\$205+ Mn**  
in revenue



**4000+**  
healthcare IT  
professionals



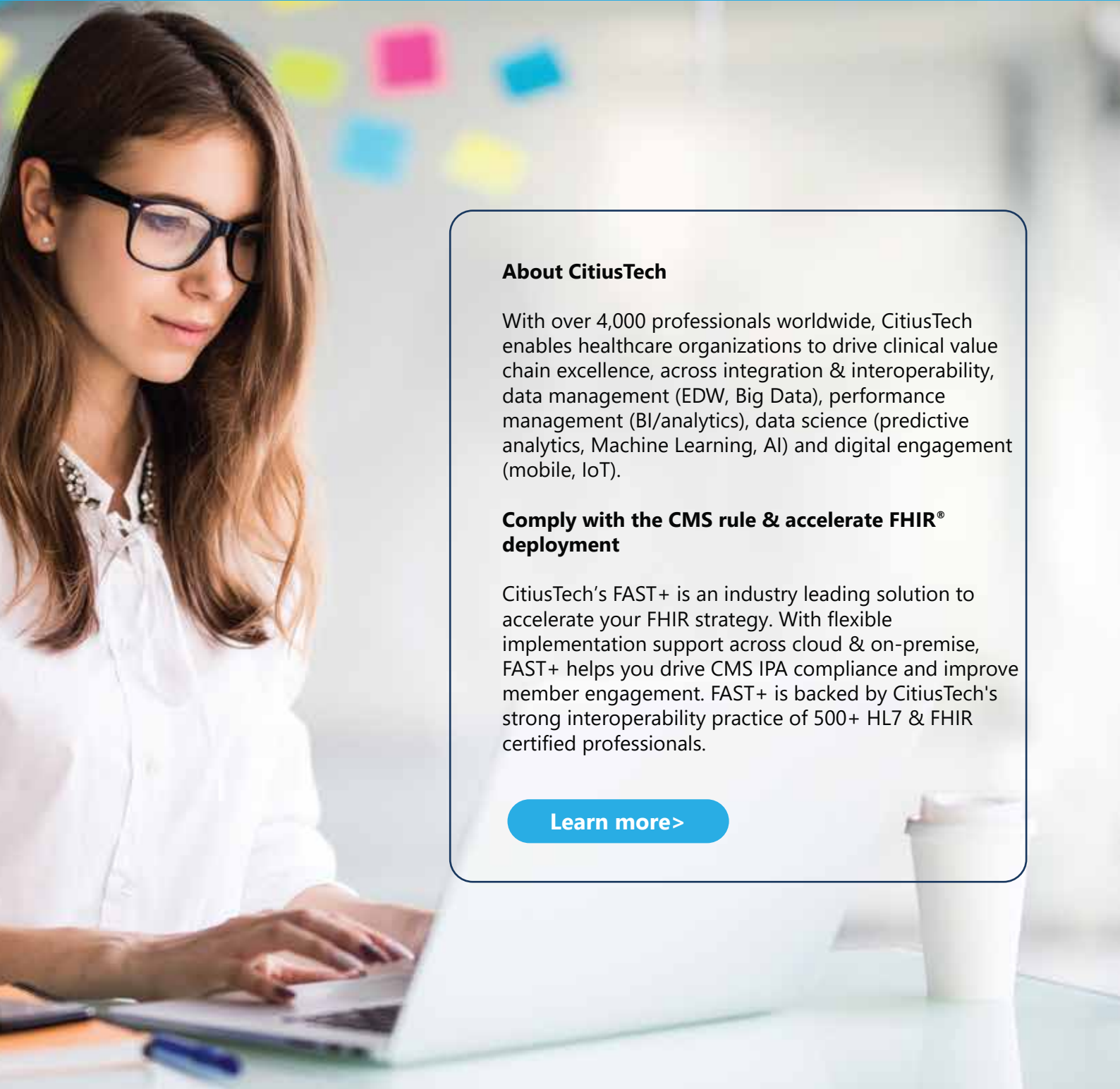
**40 Mn+**  
lives touched



**69 NPS**  
highest in the  
industry!



**110+**  
healthcare  
customers



#### **About CitiusTech**

With over 4,000 professionals worldwide, CitiusTech enables healthcare organizations to drive clinical value chain excellence, across integration & interoperability, data management (EDW, Big Data), performance management (BI/analytics), data science (predictive analytics, Machine Learning, AI) and digital engagement (mobile, IoT).

#### **Comply with the CMS rule & accelerate FHIR® deployment**

CitiusTech's FAST+ is an industry leading solution to accelerate your FHIR strategy. With flexible implementation support across cloud & on-premise, FAST+ helps you drive CMS IPA compliance and improve member engagement. FAST+ is backed by CitiusTech's strong interoperability practice of 500+ HL7 & FHIR certified professionals.

[Learn more >](#)

**Thank you**