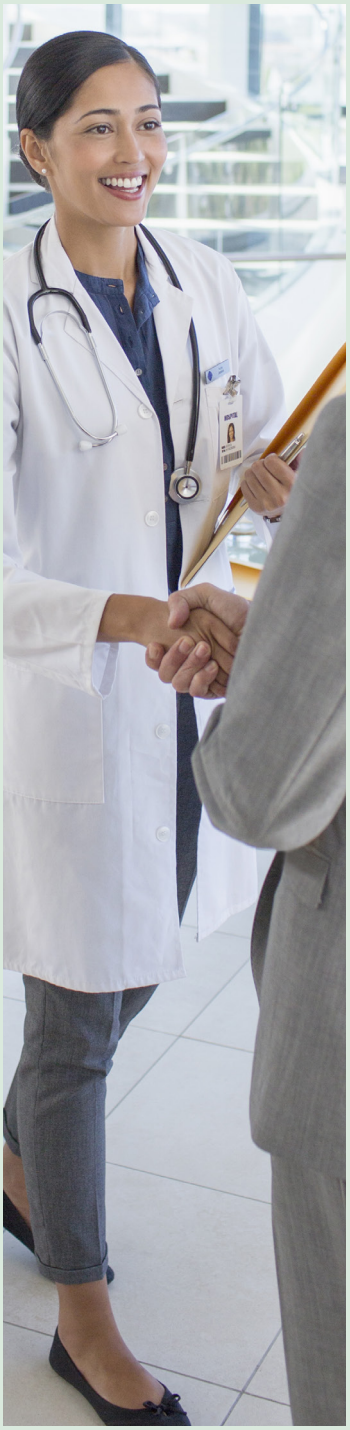
WHITE PAPER



CMS INTEROPERABILITY: IMPERATIVES & CHALLENGES FOR QUALITY & BUSINESS ASSURANCE

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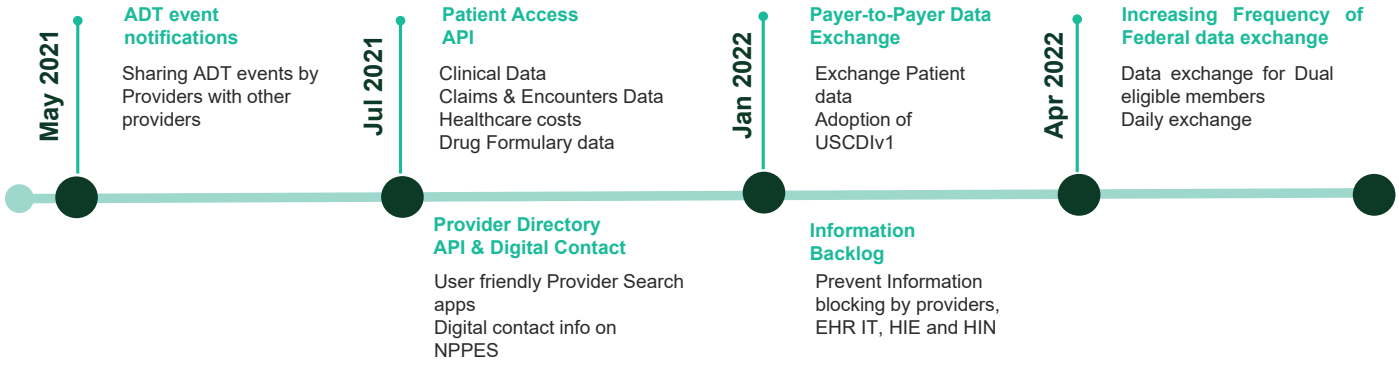
Lack of continuous data exchange has historically yielded poor health outcomes & patient care, which led to the origin of Electronic health records and data sharing exercises. While Data sharing exercises are nothing new and has been gathering momentum over the last decade, it definitely got catapulted to the next orbit with the latest ONC and CMS PATIENT ACESS rules. There have been many mandates in the past and definitely a lot more to come, but what is worth observing with the ONC and CMS PATIENT ACCESS rules is that it is a directional shift with 'Patient first mindset'. The mandate does significantly alter the ways in which Payer & Provider organizations will have to operate in both their Business models & IT Capabilities. It also becomes imperative that Payers look beyond compliance while implementing the mandates and look for 'Digital Innovation' opportunities as a downstream of the data exchange programs. While the Digital Innovation and Interoperability implementation challenges are a topic by itself, this white paper concentrates on what Payer and Provider Quality Assurance Organization should focus on to ensure cohesive Quality & Business Assurance while implementing the Interoperability mandate

The 2020 Final Rules of Interoperability & Patient Access…!!!

The final rules follow requirements in the 21st Century Cures Act, directing ONC and CMS to develop policies that foster interoperability through data sharing and identify activities that do not constitute information blocking.



So what does Quality Assurance in the world of Interoperability entail?

In the early days of data exchange programs, Quality Assurance teams were focusing on ensuring 'Are we sending the data we are supposed to share' without a lot of focus (not needed as well) on downstream Payer or Provider business activities, health Outcomes & Customer experience that is associated with the data exchange. But the current mandate is a paradigm shift in the fact that Quality Assurance organizations will be needing to ensure not only interoperability of applications conforming to the FHIR specifications, but also Performance, Resiliency, Security, Data Availability & Accuracy, Consent management, Customer experience over Omni-channel access and downstream analytical activities & reporting. Adding to the complexity are factors of existing legacy architecture in the payer/provider landscape and the ability to simulate test consumers for end to end business assurance testing. A Conceptual Architecture diagram of Interoperability is illustrated below,

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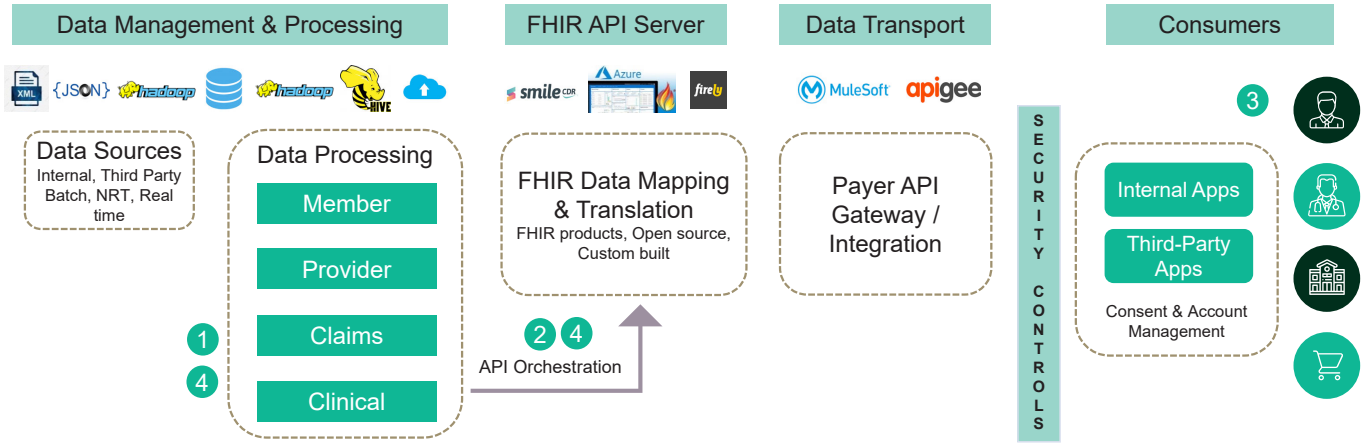

Key Architecture Considerations

- On Premise data vs moving to cloud for provisioning and future expansion needs
- FHIR server - Using FHIR server products like Azure FHIR API, AWS FHIR API, Smile CDR vs Open source implementations (Firely) vs Custom
- Performance engineering for data retrieval and API response
- Third-party registration, and consent management

Key Testing Focus Areas

1. **Data Preparation:** Validation for data accuracy in consolidation, aggregation & quality
2. **Data Delivery:** API Testing for content, transformations, Orchestration, **FHIR Data** Translation and Standards verification
3. **Data Consumption:** End to End Testing, for Omni Channel access, Third-party registration, Patient consent & Account Management
4. **Non-Functional Testing: Vulnerability,** Authorization, Authentication secured handshakes, PHI/PII, regulation standards & **Performance engineering** for data retrieval and API response

Figure 2: Conceptual Architecture of Interoperability implementation

Testing Focus Areas

Data Preparation

Data Accuracy and Availability is the fundamental building block that needs to be validated for any Data exchange. Ensuring completeness of Data, mapping accuracy and validation of change data capture mechanisms become critical. With 5-year historical data mandated by the rule many organizations might need to build or provision historical data for consumption and validating that the mandate needs are met are critical and complex as well.

Also, a phenomenon worth observing will be the migration to cloud for storage & Scalability. With Data exchange and Omni Channel access models expected to increase exponentially over time, many organizations are embarking on cloud journey to drive efficiencies in Storage cost & Scalability. What this essentially means to Quality Assurance organizations is that Data Quality, Integrity, Consistency and Availability ensured already in the on-premise data applications have to be validated for the movement to cloud additionally with Performance, resiliency & security testing.

Data Delivery

With the standardization of data delivery through FHIR standards, data Orchestration and Delivery typically happens through a combination of APIs and FHIR implementation. Automated test validation mechanisms to check for Conformance to FHIR Standards and data orchestration accuracy is the key to providing complete test coverage and acceleration in testing. Ensuring that existing business capabilities remain intact through adequate regression coverage will be critical as existing services are likely to get enhanced to support the data exchange. What would also be worth noting would be the modality of FHIR implementation: COTS products like SmileCDR, Edifecs, 1upHealth, WS02 or adoption of open source like Firely or custom inbuilt with repository or façade framework implementations. Each type of implementation would warrant different testing methodologies.

Data Consumption

Overlaid with the data provisioning, FHIR Orchestration & SMART specifications is the Omni channel customer experience that has to be ensured. Tests across channels and with varied demographic profiles that mimic production usage is the key to ensuring customer experience. Automated customer experience measurement frameworks will be needed to measure and monitor on an ongoing basis. Needless to state, downstream Analytical mining & reporting out of the customer access and outcome-based models need to be validated as well. Quality of these models provide avenues for continuous improvement of patient care and demand sophisticated testing mechanisms.

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Non-Functional Testing

Performance Engineering: With millions of users, providers, EHR organizations and other vendors accessing data across channels will naturally result in an explosion of request for data. Performance engineering of applications across Data preparation, orchestration and consumption layers will be of paramount significance. Resiliency will be a critical factor too with changes in the underlying infrastructure.

Security Testing: Any Data exchange validation without ensuring Data Security in transit and rest is incomplete. With such a large nature of data sharing exercise it is imperative that security controls are validated sufficiently to thwart data breaches. Security controls need to be validated at multiple levels, at external entry points and with in-house applications as well.

Test Data Needs: Determining 'What data to validate with?' is a very critical aspect of the Quality assurance activities. This will require using machine learning techniques coupled with tools that will analyze the payer/provider data and identify test data needs. Data de-identification mechanisms can help provision the test data for testing needs.

How can Infosys assist Interoperability Quality Assurance?

With a firm understanding of Quality assurance needs for Interoperability and with 520 associates trained and/or certified, we come prepared to guide and accelerate the implementation. With automated solutions in the facets of Data Testing (on premise or cloud), API testing, Performance engineering, Security and end to end Business assurance we help in crashing GTM time & bring > 50% reduction in effort.

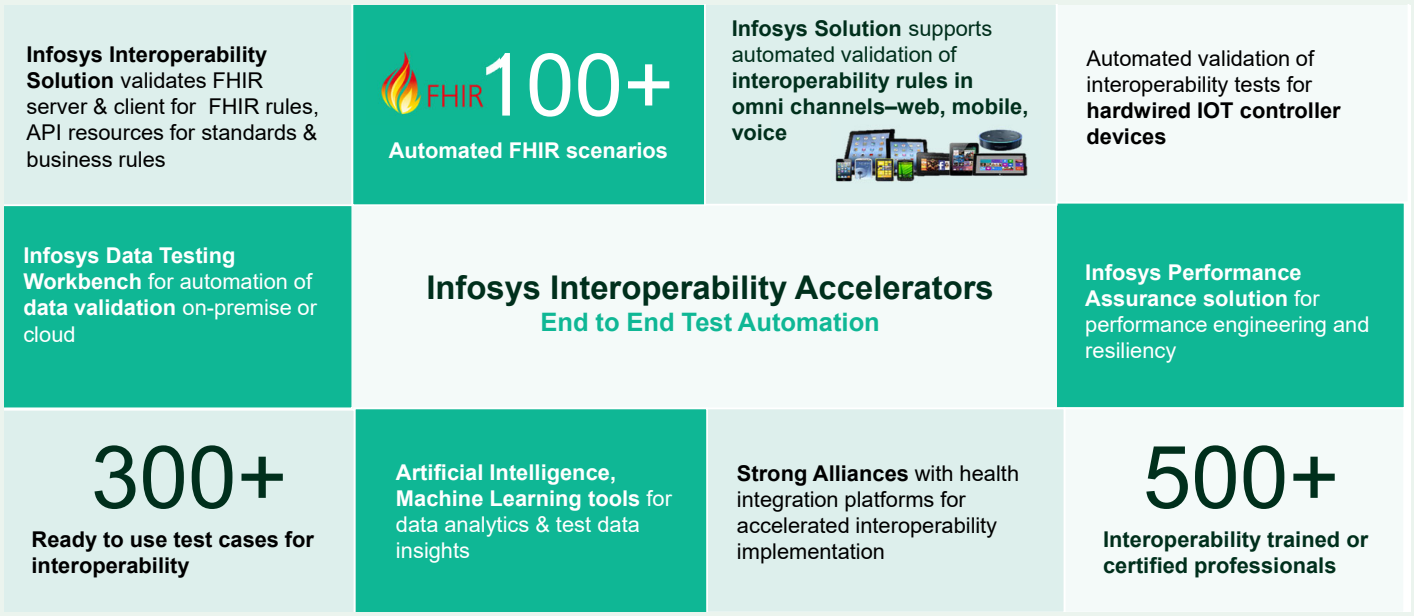

Figure 3: Infosys accelerators for Interoperability implementation

We also employ AI & ML based tools & techniques that provide the necessary insights into the data and determine 'What needs to be tested'. Finally, through our Alliances and partnerships in FHIR implementation, we can jumpstart and co-create custom solutions for your needs and train your resources as well. Infosys is a leader in the industry in Quality Assurance, Learning & Enablement, we bring in distinctive solutions that will help accelerate your implementation and build a sustainable testing model for future data sharing exercises.

For more information, contact askus@infosys.com

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