Smile Health Data Platform: Architecture and Key Solutions
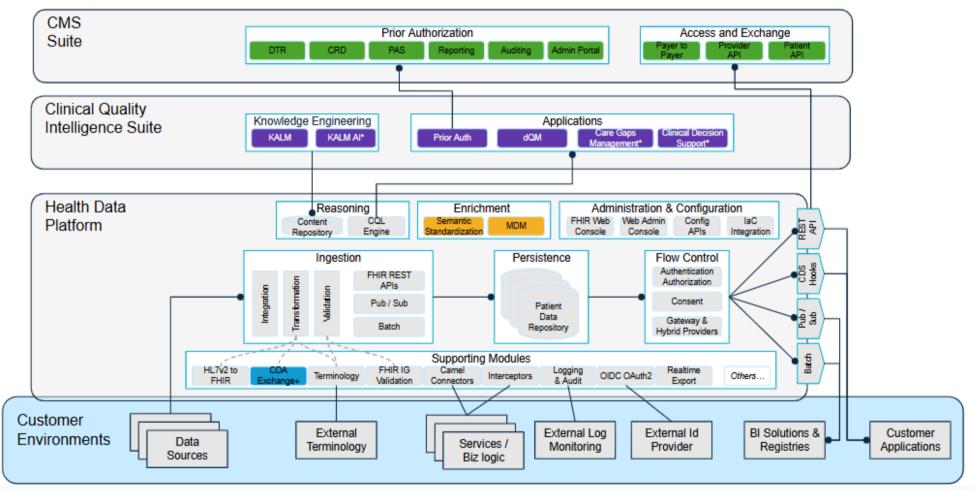
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The Smile Health Data Platform is a comprehensive, scalable solution designed to streamline healthcare data ingestion, management, and analytics. Built on Fast Healthcare Interoperability Resources (FHIR®) standards, it integrates seamlessly with clinical systems, supporting real-time data processing and enhancing healthcare decision-making.

Smile Digital Health Products

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Smile Health Data Platform: Architecture and Key Solutions

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Health Data Platform - Delivering Optimized, Computable Data

Ingestion

Connect to multiple data sources, map and transform into FHIR, and validate. Completed through multiple mechanisms including traditional API-based transactions, streaming through our pub/sub mechanism, or batch import.

Persistence

Singular or multiple databases, or a database with partitions with flexibility to achieve maximum scalability.

Supporting Modules

Additional modules to maximize the use of the platform, such as tools for mapping and transforming data into FHIR like CDA Exchange+**, managing medical terminologies, leveraging IGs for ingestion, customizing data flows and orchestrations with Camel native integrations and interceptors, logging/auditing for compliance and monitoring, robust security features, and export changes to FHIR resources with Realtime Export to a remote database.

Clinical Reasoning Engine

Embedded within the Health Data Platform and based on CQL (Clinical Quality Language), this engine can derive insights from FHIR-based data as well as host a content repository where knowledge artifacts or computable expressions written in CQL can be stored.

Enrichment

Upleveling the data to prepare it for computation through automating Semantic Standardization** of FHIR resource contents and MDM** for creation of a Golden Record among unmatched records.

Administration & Configuration Tools

System Administrators leverage the FHIR Web and Web Admin Console to visualize how the system works, the data flow, and monitor the health status. Infrastructure as Code capabilities allow for automation, consistency, and scalability in deploying and managing infrastructure resources.

Flow Control

A control layer that includes capabilities for authenticating and authorizing access, filtering based on consent provisions, and gateways that allow data flow into different database persistence federation schemas.

Access

Access to the data repository is through REST APIs, CDS hooks, asynchronous or subscription-based communication with pub/sub capabilities, or through Batch Export.

Clinical Quality Intelligence Suite (CQIS)** - Generating Insights and Findings

Knowledge Engineering

Knowledge authoring lifecycle management (KALM) tools built to populate a content repository with CQL-based knowledge artifacts. These tools include KALM, a CQL integrated development environment, and KALM AI, an AI-based automation solution that mines text from clinical practice guidelines and policy documents to streamline the creation of decision trees and knowledge artifacts.

Applications

The CQL Engine reasons against the knowledge artifacts generated in Knowledge Engineering, and those insights are delivered through multiple applications:

- Prior Authorization Support: for adjudication capabilities
- dQM (Digital Quality Measures): generating quality measures at a population level
- Care Gaps Management: identifying gaps in care on an individual level
- Clinical Decision Support: recommendations on how to deliver the best care for a patient

These applications drive continuous quality improvement and support data-driven care delivery.

CMS Suite** - Achieving Compliance and Automation

Prior Authorization: A complete prior authorization solution based on the CMS-0057-F rule requirements and recommendations designed to leverage the CQL Engine to automate both the PA inquiry and adjudication processes.

Access and Exchange: APIs required in CMS-0057-F to facilitate data access for patients and providers as well as data exchange among payers.

Transform your healthcare data today with the Smile Health Data Platform to boost efficiency, optimize decisions, and revolutionize operations—let's connect!

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