

# One **API** Marketplace for Healthcare



**Achieving Compliance With CMS/ONC  
Interoperability Rules with Google Cloud and  
DigitalAPICraft's Healthcare Solutions.**

Powered by:



Google Cloud

**apigee**

# Achieving Compliance With CMS/ONC Interoperability Rules with Google Cloud and DigitalAPICraft's Healthcare Solutions

- The biggest challenge healthcare organizations are facing is data interoperability and orchestration.
- It is time to effectively and securely share and leverage healthcare data.
- Move on from interoperability standards. Offer experience healthcare and delight your customers with Disruption Suite for Healthcare.

- 🎯 HHS Published the final Healthcare Interoperability, Information Blocking and Patient Access Rules Payers, Providers and Certified Health IT developers must support
- 🎯 Interoperability by exchanging health plan and clinical data
- 🎯 FHIR® R4 compliant APIs to access Patient data

## CMS and ONC Final Rules

### CMS Interoperability and Patient Access Final Rule

- Patients access to their health information
- CMS Regulated Payers:
  - Medicare Advantage (MA),
  - Medicaid and CHIP Managed and FFS
  - Qualified Health Plan (QHP) issuers on the Federally-facilitated Exchanges (FfEs).



**Published** in the Federal Register on 5/1/2020 and effective June 30, 2020 and timelines starting Jan 1, 2021 with enforcement discretion till July 1, 2021

The final rule from CMS on Interoperability and Patient Data Access has been published in the Federal Register on 5/1/2020 and is effective on June 30, 2020



### ONC Cures Act Final Rule

- Implements interoperability provisions of 21st Century Cures Act (2016)
- Mandates technical standards for healthcare data interoperability



**Published** in the Federal Register on 5/1/2020 and effective on June 30, 2020

The final rule from ONC on Interoperability and Information Blocking has been published in the Federal Register on 5/1/2020 and is effective on June 30, 2020



**Medicare and Medicaid Programs; Patient Protection and Affordable Care Act; Interoperability and Patient Access for Medicare Advantage Organization and Medicaid Managed Care Plans, State Medicaid Agencies, CHIP Agencies and CHIP Managed Care Entities, Issuers of Qualified Health Plans on the Federally-Facilitated Exchanges, and Health Care Providers**

A Rule by the Centers for Medicare & Medicaid Services on 05/01/2020

PUBLISHED DOCUMENT	DOCUMENT DETAILS
<p><b>AGENCY:</b> Centers for Medicare &amp; Medicaid Services (CMS), HHS.</p> <p><b>ACTION:</b> Final rule.</p> <p><b>SUMMARY:</b> This final rule is intended to move the health care ecosystem in the direction of interoperability, and to signal our commitment to the vision set out in the start</p>	<p><b>Printed version:</b> 137</p> <p><b>Publication Date:</b> 05/01/2020</p> <p><b>Agencies:</b> Centers for Medicare &amp; Medicaid Services Office of the Secretary</p> <p><b>Dates:</b> These regulations are effective on June 30, 2020.</p> <p><b>Effective Date:</b> 06/30/2020</p>



**21st Century Cures Act: Interoperability, Information Blocking, and the ONC Health IT Certification Program**

A Rule by the Health and Human Services Department on 05/01/2020

PUBLISHED DOCUMENT	DOCUMENT DETAILS
<p><b>AGENCY:</b> Office of the National Coordinator for Health Information Technology (ONC), Department of Health and Human Services (HHS).</p> <p><b>ACTION:</b> Final rule.</p> <p><b>SUMMARY:</b> This final rule implements certain provisions of the 21st Century Cures Act, including Conditions and Maintenance of Certification requirements for health information technology (health IT) developers under the ONC Health IT Certification Program (Program), the voluntary certification of health IT for use by pediatric health care providers, and reasonable and necessary activities that do not constitute information blocking. The implementation of these provisions</p>	<p><b>Printed version:</b> 137</p> <p><b>Publication Date:</b> 05/01/2020</p> <p><b>Agencies:</b> Department of Health and Human Services Office of the Secretary</p> <p><b>Dates:</b> Effective date: This final rule is effective on June 30, 2020.</p> <p><b>Effective Date:</b> 06/30/2020</p> <p><b>Document Type:</b> Rule</p> <p><b>Document Citation:</b> 45 CFR 95.402</p> <p><b>Page:</b> 25642-25961 (320 pages)</p>



# CMS and ONC Rules

CMS, in partnership with ONC has identified Health Level 7® (HL7) Fast Healthcare Interoperability Resources (FHIR®) Release-4.6.0 as the foundational standard to support data exchange via secure Application Programming Interfaces (APIs).

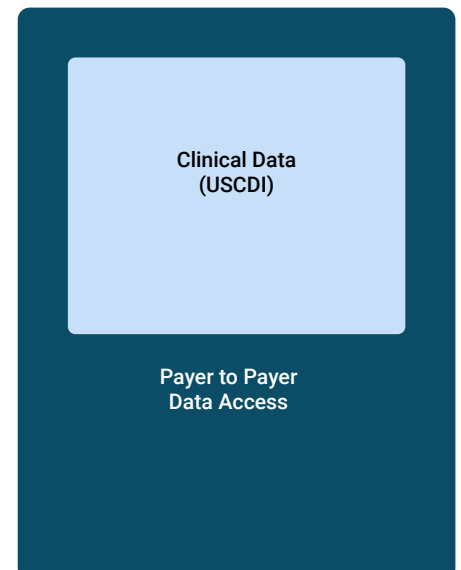
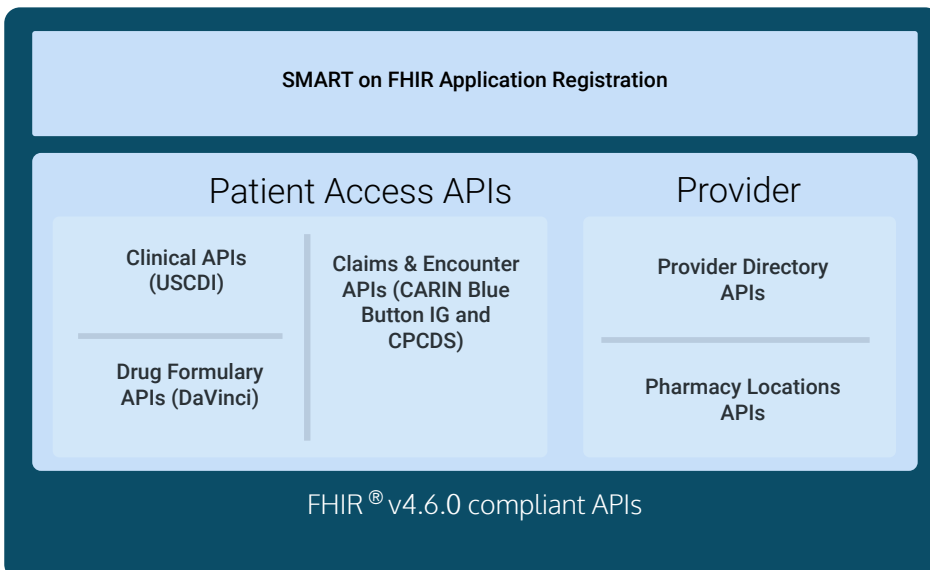
## CMS Rules – Timelines and Key Requirements

Late 2020	Jul 1, 2021	Jan 1, 2022	Apr 1, 2022
<p>CMS will publicly report:</p> <ol style="list-style-type: none"> <li>Eligible clinicians, hospitals, &amp; critical access hospitals that may be <b>information blocking</b> based on how they attested to certain Promoting Interoperability Program requirements</li> <li>Providers who do not list or <b>update their digital contact information</b> in NPPES</li> </ol>	<p>Send Admission, Discharge, and Transfer (<b>ADT</b>) <b>Event Notifications</b> to another healthcare facility or to another</p> <p>Implement &amp; maintain a secure, standards-based (HL7 FHIR® R4) APIs:</p> <ol style="list-style-type: none"> <li><b>Patient Access APIs</b> <ol style="list-style-type: none"> <li>Claims &amp; Encounters</li> <li>Clinical information</li> </ol> </li> <li><b>Provider Directory APIs</b></li> </ol>	<p>Implement <b>Payer-to-Payer data exchange</b> of certain patient clinical data (USCDI v1 data set) at the patient's request</p>	<p><b>Improve the Dually Eligible Experience</b> by Increasing the frequency of <b>Federal-State data Exchanges</b></p>

## ONC Rules – Timelines and Key Requirements

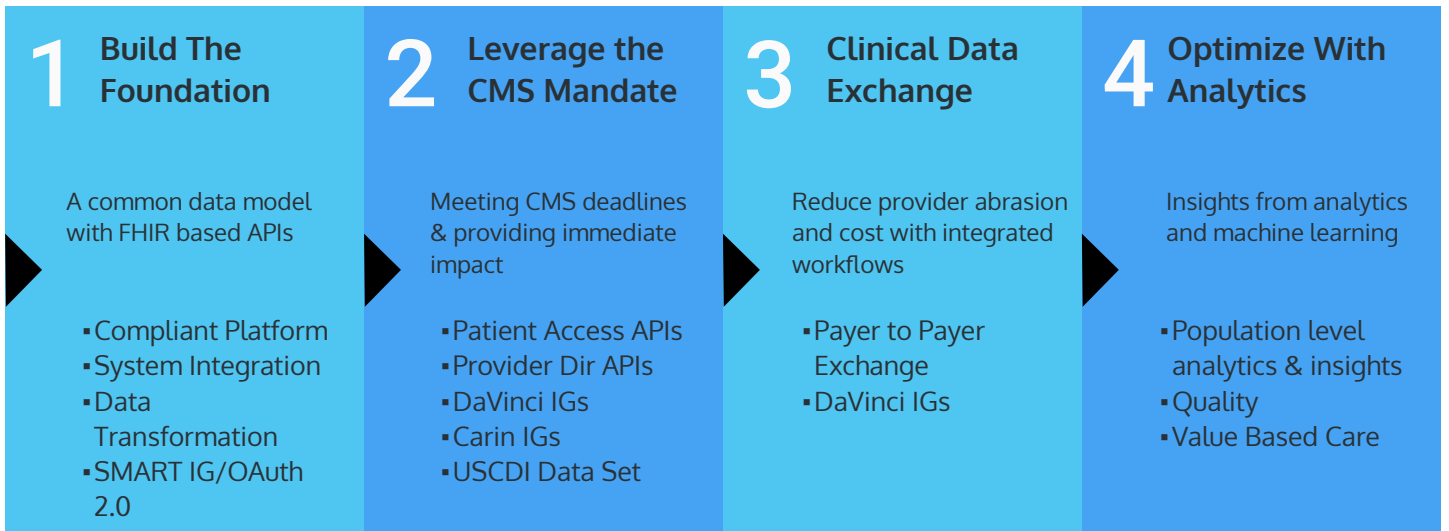
Dec 2020	Jul 1, 2021	Jul 1, 2022	Jul 1, 2023
<ul style="list-style-type: none"> <li>Providers and Health IT Developers (Actors) to provide <b>assurance</b> that they will not take any action that constitutes <b>information blocking</b> or actions that inhibit access, exchange and use of <b>Electronic Health Information (EHI)</b>, EHI definition limited to USCDI</li> <li>First <b>Real-World testing plan</b> is due on 12/15/2020</li> </ul>	<ul style="list-style-type: none"> <li>Health IT developers to send annual notice to all customers containing provisions that contravene communications</li> <li>Compliance with <b>exceptions</b> required, EHI definition limited to USCDI</li> <li>First <b>attestation to conditions of certification</b> required by 4/1/2021</li> </ul>	<ul style="list-style-type: none"> <li>New <b>HL7 FHIR® API</b> Capabilities and other cures update criteria must be rolled out</li> <li>Compliance with <b>exceptions</b> required, full EHI definition comes into effect.</li> </ul>	<ul style="list-style-type: none"> <li>Full <b>EHI Export Capability</b> must be Rolled out</li> </ul>

## CMS Final Rule – Technical Requirements

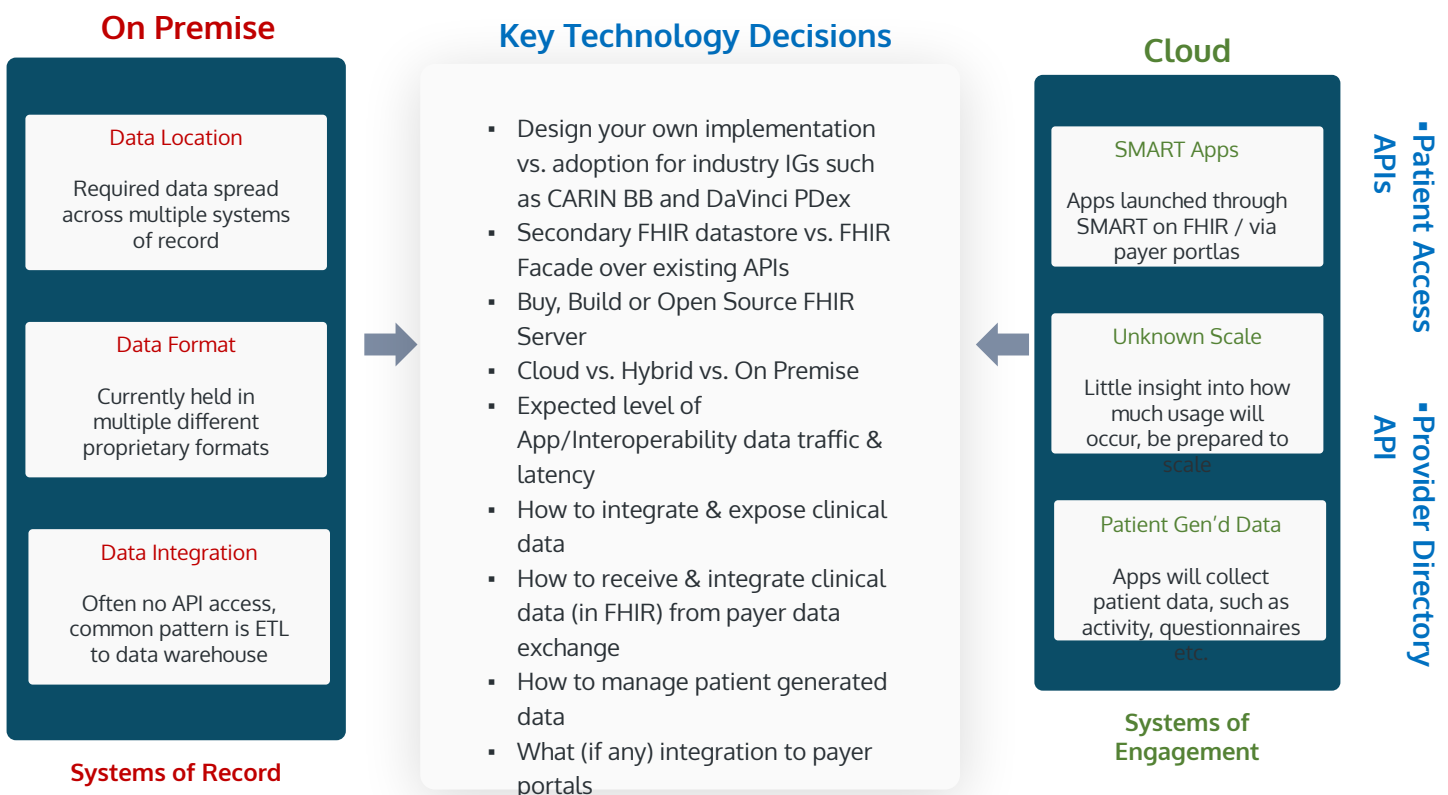


# Compliance Framework

## A Phased Approach to Compliance Framework

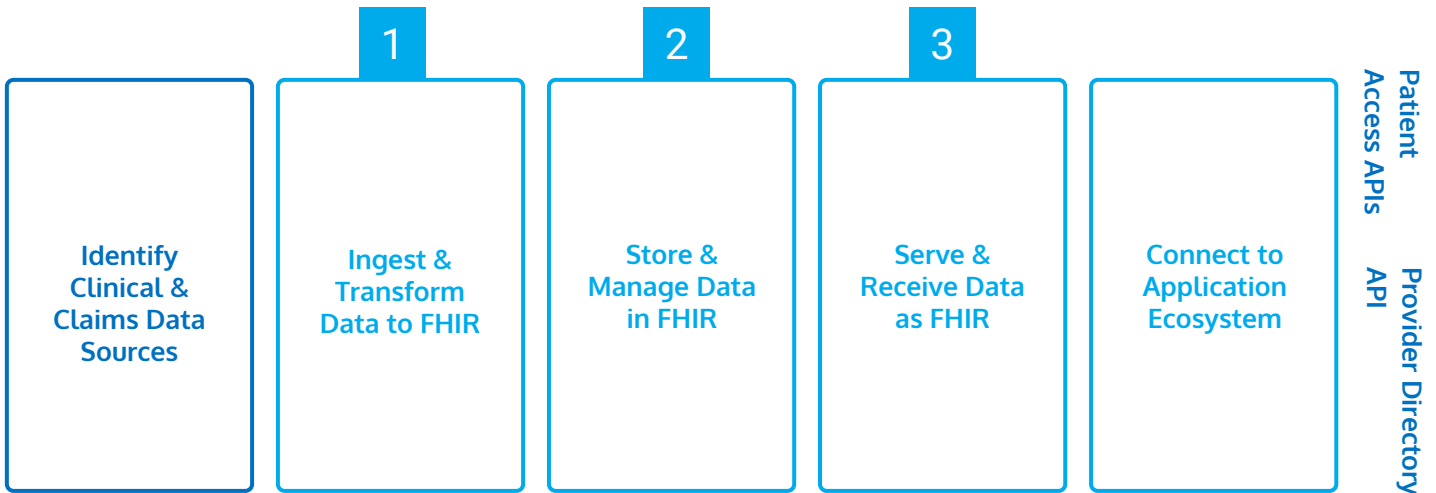


## Key Technology Decisions

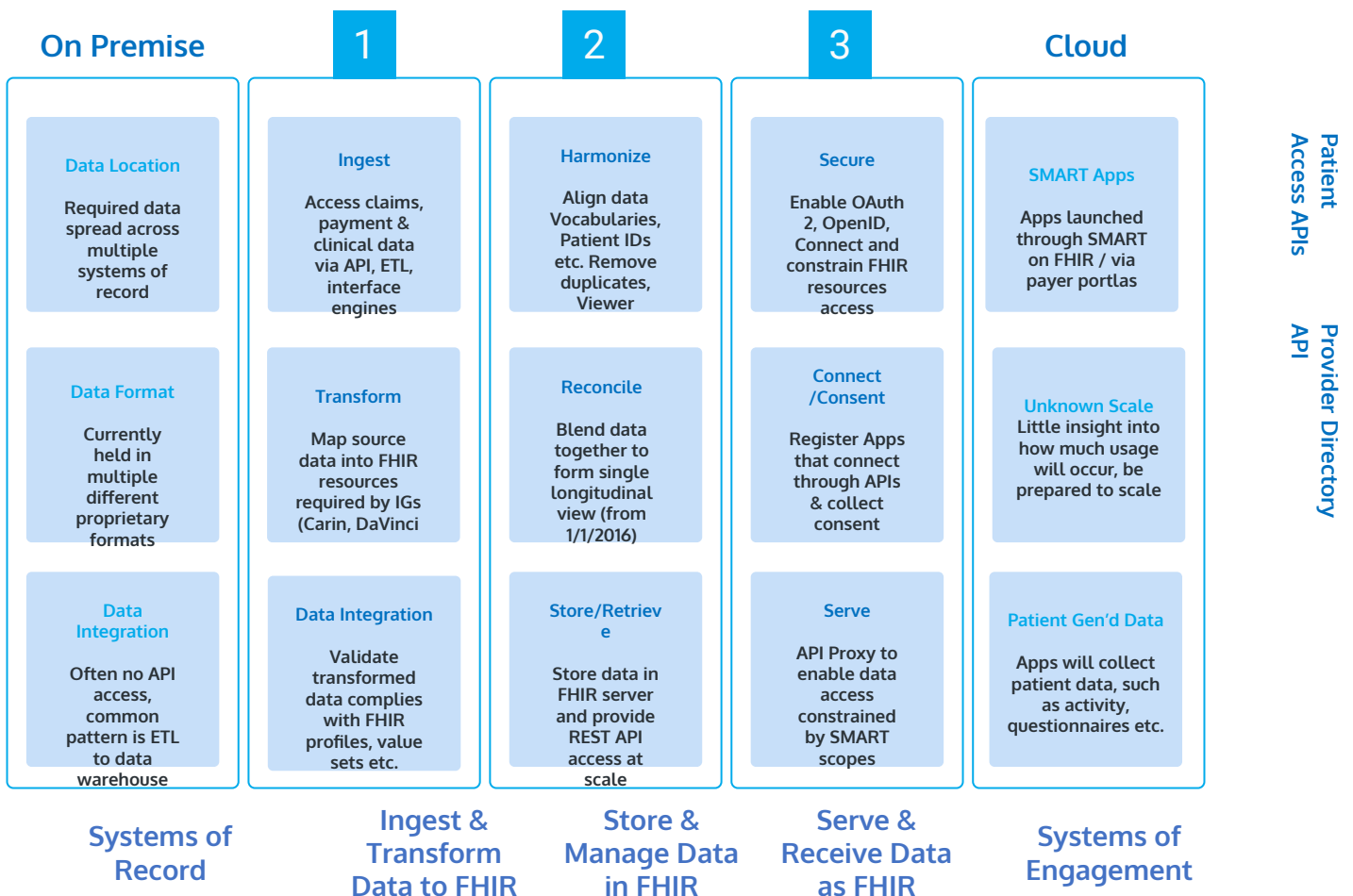


# Compliance Framework

## CMS Rules Compliance Framework



## Key Technology Decisions



# Compliance Framework

## Google Cloud Accelerators



**Cloud Healthcare API** with industry-standard protocols and formats to accelerate ingestion, storage, analysis, and integration of healthcare data



**Apigee HealthAPIx** to manage, secure, and scale APIs with an enterprise-grade platform and easily ingest healthcare data from internal, external, or open-source FHIR®-ready partners

## Google Cloud Accelerators for Interoperability

### Healthcare Data Interoperability Accelerators (OSS)



#### FHIR Server

Cloud Healthcare API

- Support for multiple FHIR® versions: R4, STU3 and DSTU2
- Backend store support for key healthcare standards: FHIR® R4, DICOM and HL7 v2



#### API Management

Apigee

- Security, traffic management and analytics for API consumers
- Built-in capability to auto provision FHIR® stores in GCP with SMART on FHIR support

## Interoperability APIs

### Interoperability APIs

#### Patient Access APIs

Clinical APIs (USCDI)

Claims & Encounter APIs (CARIN Blue Button IG and CPCDS)

Drug Formulary APIs (DaVinci)

#### Provider Directory

Provider Directory APIs

Pharmacy Locations APIs

#### Payer to Payer Data Access

Clinical Data (USCDI)



Apigee HealthAPIx: App Registration & SMART Access Control

Smart/OAuth 2.0 APIs

OpenID Connect

FHIR® R4 APIs



Cloud Healthcare FHIR® Store: FHIR APIs and IGs

Data Access

Data Management

# One API Marketplace

- The biggest challenge healthcare organizations are facing is data interoperability and orchestration.
- It is time to effectively and securely share and leverage healthcare data.
- In partnership with Google Cloud's Apigee, DigitalAPICraft's Solution to meet CMS and ONC Compliance and Interoperability.

- Enabling healthcare institutions go-to-market with a digital marketplace and enriched functional application without disrupting your existing digital applications
- Ready to go digital healthcare enablement supporting governance, compliance and regulations while plugging into your existing healthcare infrastructure
- Leverage a suite of FHIR/HL7 APIs and Smart compliant APIs and enabling API ecosystems with ready made standards assets and governance tool sets for faster go to market IT deliverables

## One API Marketplace for Healthcare – Value Adds



Run on any private or public Cloud



Scale at Cloud Magnitude

Run all healthcare apps at cloud scale; consistently deliver to meet your healthcare enterprise challenges.



Easy on Investments, Strong on Functionality

Use the best of Open Source Software



Touch the Last Mile Finish Line

Don't just stop at Interoperability. Reach the Experience Healthcare finish line and transform into an Experience Enterprise with ease.



Ready-to-use artifacts

- Healthcare FHIR APIs and Microservices
- Experience FHIR APIs and Microservices
- Healthcare SMART Apps
- Healthcare FHIR Developer Portal



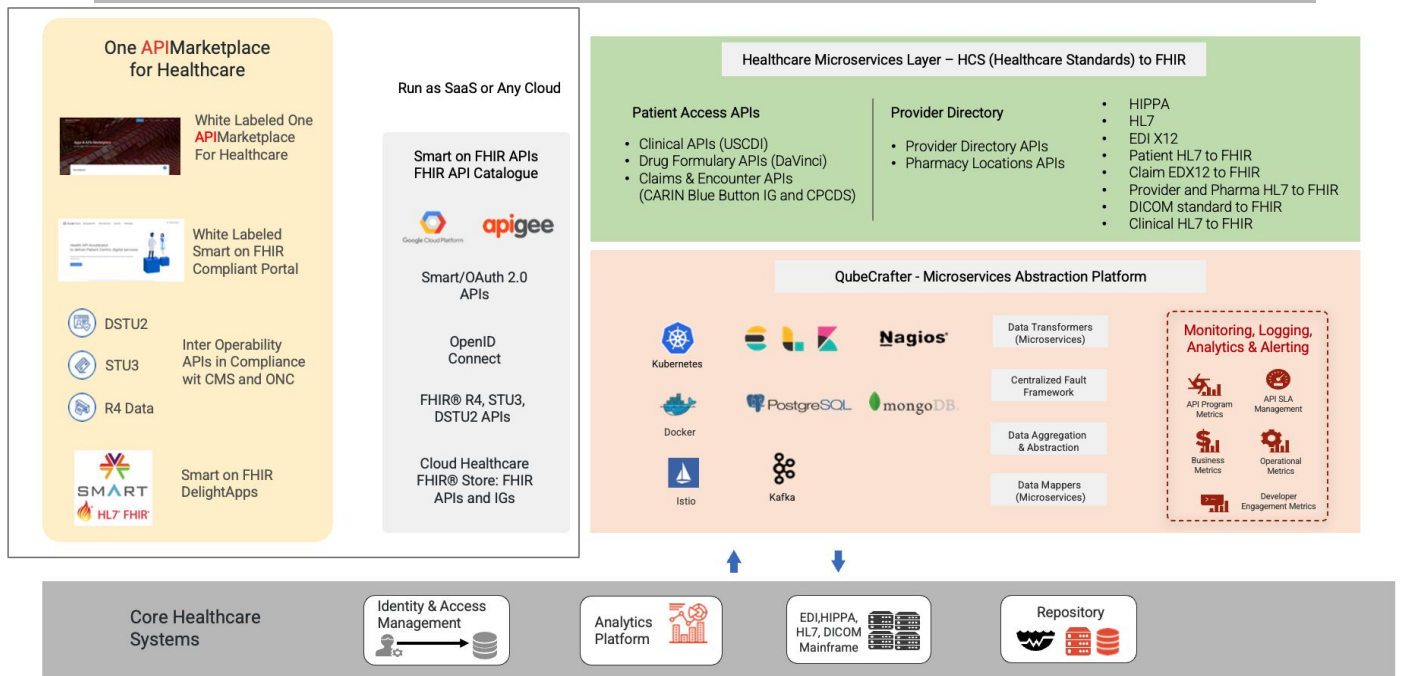
Innovate at Speed

Develop and deploy all your software, artefacts, custom code, apps etc. continuously, and faster.



# One API Marketplace for Healthcare Tech Stack

## One API Marketplace Tech Stack for Healthcare



## Three distinct solution platforms



### QubeCrafter

Digital Data  
Orchestration and  
Microservice Engine



### APICrafter

Intelligent  
API Management Platform  
Powered by Apigee.



### ExperienceCrafter

Consumer Apps, Internal,  
Apps, Partner Apps,  
Developer Portal,  
Marketplace

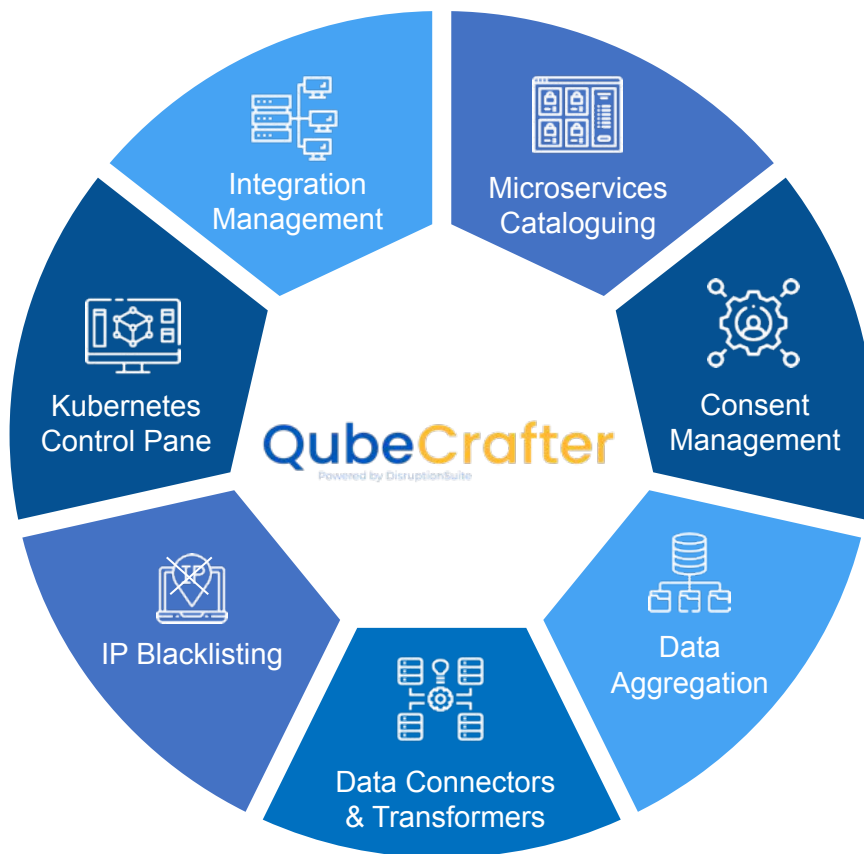




## QubeCrafter

A solution platform that delivers enterprise digital transformation faster and easier by leveraging:

- Easier to Manage all Microservices
- Central Repository for Data Integration
- Central Repository for Data Mapping Services
- Central Governance FHIR Artefacts
- Kubernetes Cluster distributed across multi-cloud
- DevOps Automation tools, utilities, Monitoring



## Integration Management

Integration of APIs, services, data, and systems has long been one of the most challenging yet most essential requirements in the context of enterprise software application development. QubeCrafter eases this obstacle by offering simplified way for all your systems to integrate, streamline and be able to scale with ease.

- Microservices Management
- Container Orchestration
- Cluster Management
- CI/CD
- Analytics, Monitoring, Logging & Alerting
- Audit Logging
- Control Pane



## APICrafter

An intelligent API solution platform powered by Apigee and GCP; bundled with our ready-to-use APIs, accelerators, and utilities to kick-start your API journey.

Securely manage your API development right from creation to deployment

Socialize and monetize APIs to open up revenue streams

Achieve business growth through insights obtained through analytics

Leverage a suite of FHIR/HL7 APIs and Smart compliant APIs

## Healthcare API Catalogue



### Patient Information Services

- Patients By ID
- Patient History
- Recent Claim Transactions
- Patients History Summary



### Claim Initiation Services

- History
- Reference
- Coverage
- Priority



### Practitioner Services

- ID
- Role
- Qualification
- History

## Experience Healthcare API Catalogue



### Patient Services

- Patients By ID
- Patient History
- Recent Claim Transactions
- Patients History Summary



### Claim Services

- Claim History
- Payment to Registered Merchant
- Payment to Another Account



### Diagnostic Services

- Diagnostic Reports
- Diagnostic Aggregator by Category
- Diagnostic History



### Medication Services

- Medication Services
- Medication History



### Related Patient Services

- Related Patient Records Services



### Organization Services

- Organization History

# Architecture Differentiation

An intelligent API solution platform powered by Apigee and GCP; bundled with our ready-to-use APIs, accelerators, and utilities to kick-start your API journey.

- Automated Software Development Lifecycle toolsets included
- Authorization and Authentication built-in, no coding and configurable with external IDPs
- Product packaging abilities for consumption of APIs, apps, documentation, and any other assets
- Pre-built developer portal/marketplace with automated documentation facilities
- Cataloguing Service for consumers of API Services spanning all deployments across clouds and on-premise
- Hybrid built-in spanning clouds and on-premise
- Statistical Analytics out of the box reporting and consumable across digital value chain roles
- Monitoring out of the box with SLA metric metering with administrative configurable actions
- Product Monetization abilities of packaged assets with built-in reporting, invoicing, dashboard, notifications, billing system plugins, and lifecycle billing assets
- Pre-built Marketplace with automated assets generation and documentation facilities
- Cataloguing Service for Microservices spanning all micro-service containers across clouds and on-premise
- One click deployment across all installations
- Micro-services transformation cataloguing service
- Marketplace built-in integration with CRM systems
- Built-in cluster management capabilities
- Built-in FHIR and HL7 assets for consumption
- Built-in Marketplace Commercialization capabilities
- Micro-services connection cataloguing service
- Built-in API abuse and protection capabilities
- Built-in catalogue of data mappers for integration
- Built-in FHIR/HL7 assets for integration to Healthcare services
- Built-in Marketplace sandboxes based on subscription features

# Data Consolidation Microservices

An intelligent API solution platform powered by Apigee and GCP; bundled with our ready-to-use APIs, accelerators, and utilities to kick-start your API journey.



HCS (Healthcare Standards) to FHIR/HL7 Standards Data Mapping Layer



HCS Schema - HCS schema/structure for each of the HCS formats



FHIR Schema - Equivalent FHIR resource API and its schema



Mapper File - Mapper file with the maximum identified matching elements .



MS and new services for enriching the EDI-FHIR mapping.



Database - HCS file might have multiple delimiters with flexible DB schema.



Data Mapper with Drag and Drop mapping with EDI to JSON schema



Marketplace API for Healthcare FHIR and HL7 Standard



# Marketplace for Healthcare

- An intuitive and fast way for Healthcare and 3rd party Healthcare aggregators to setup and deploy a marketplace is here!
- Create and publish your APIs and apps on a marketplace in weeks.
- DigitalAPICraft's Marketplace for Healthcare caters to all your consumer, administrator and infrastructure needs.

## Key Features



### Integration with Apigee

In-built integration with the Apigee Edge API platform, allowing the app and API publishers to leverage credential generation, usage metering, analytics and monetization.



### API & App Monetization

Set up packages best suited for your business; offers flexibility to tailor on demand packages, easy and intuitive package pricing.



### Integration with CRM systems

Easy integration with leading CRM systems; offers great user experience by enhancing lead generation, dispute resolution, process updates and much more.



### Team Feature & Governance

Allows multiple teams within the organization to collaborate on various aspects of the marketplace such as documentation, blogs, forums, and other asset.



### Highly Extensible

Built on a modular architecture; quickly and easily extend the platform for new features for faster time to market.

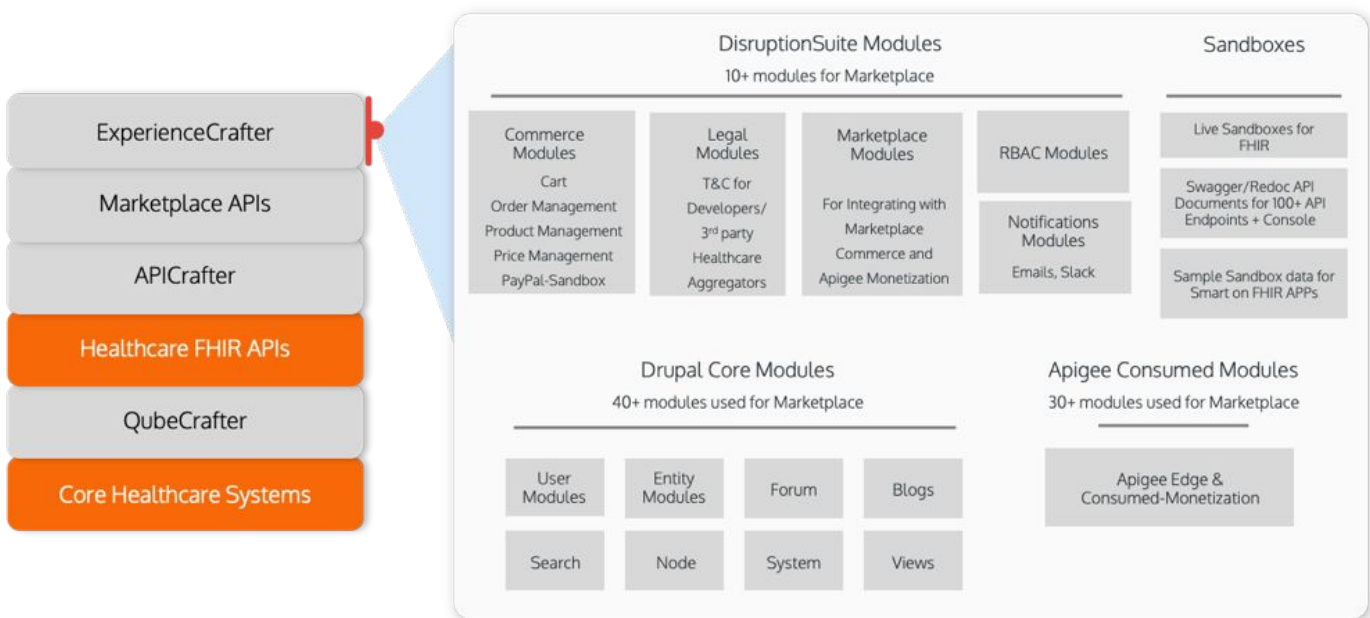
- ◆ Built-in Integration with Apigee
- ◆ Onboarding Workflows
- ◆ Developer Subscriptions and App Management
- ◆ Developer Dashboards and My Subscriptions
- ◆ Developer Keys Management
- ◆ API Documentation + Try Out Console
- ◆ API as a Product – Catalogue

- ◆ Multi-tenancy
- ◆ Unauthenticated User Flows
- ◆ Apigee Monetization Integration
- ◆ App Monetization Integration
- ◆ App Monetization & Commercialization
- ◆ CRM Features
- ◆ Payment Gateway Integration
- ◆ Commerce Reporting

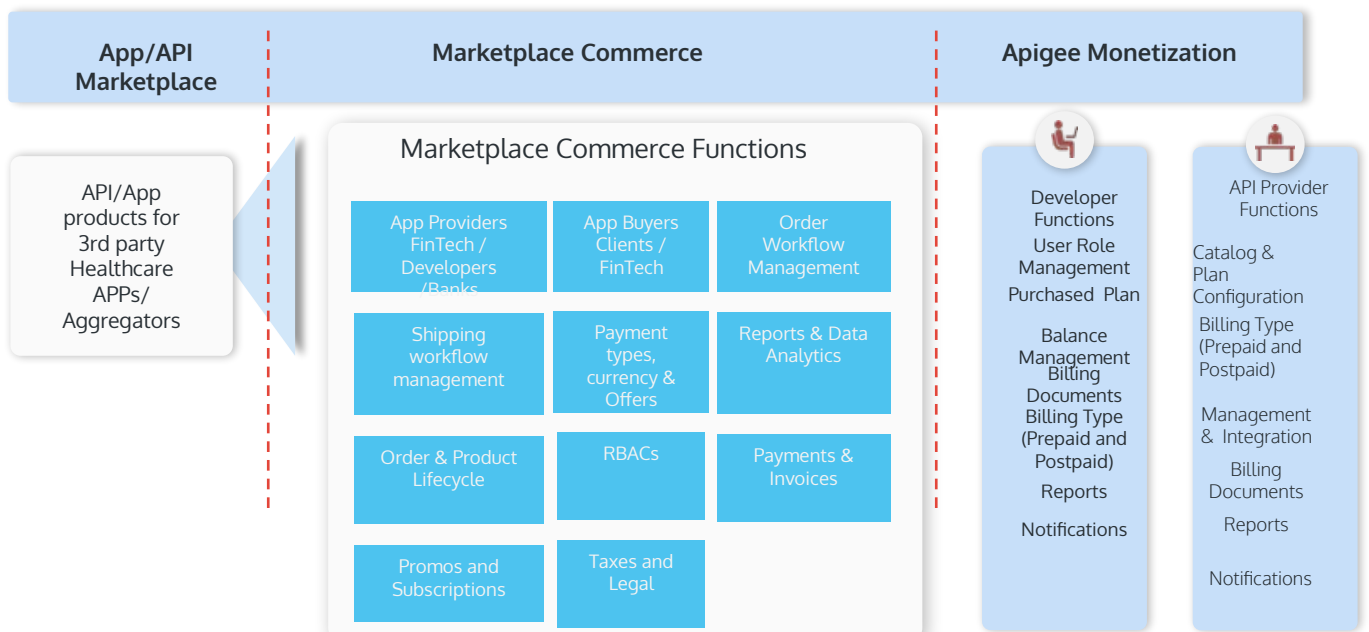
- ◆ Developer App Code Submission, POC Reviews and Workflows
- ◆ Support Ticket System
- ◆ Administration Dashboard
- ◆ Developer Sandbox

- ◆ RBAC
- ◆ SEO
- ◆ SSO

## Healthcare API Marketplace



## Monetization & Commerce for App/API Marketplace



# Provider/Payer's Pilot Agenda – Google FHIR and Healthcare Interoperability on Google HealthAPIx

Summary: Google Cloud and DigitalAPICraft's Discovery and POC on Google's FHIR and HealthAPIx Accelerator in the following high level approach

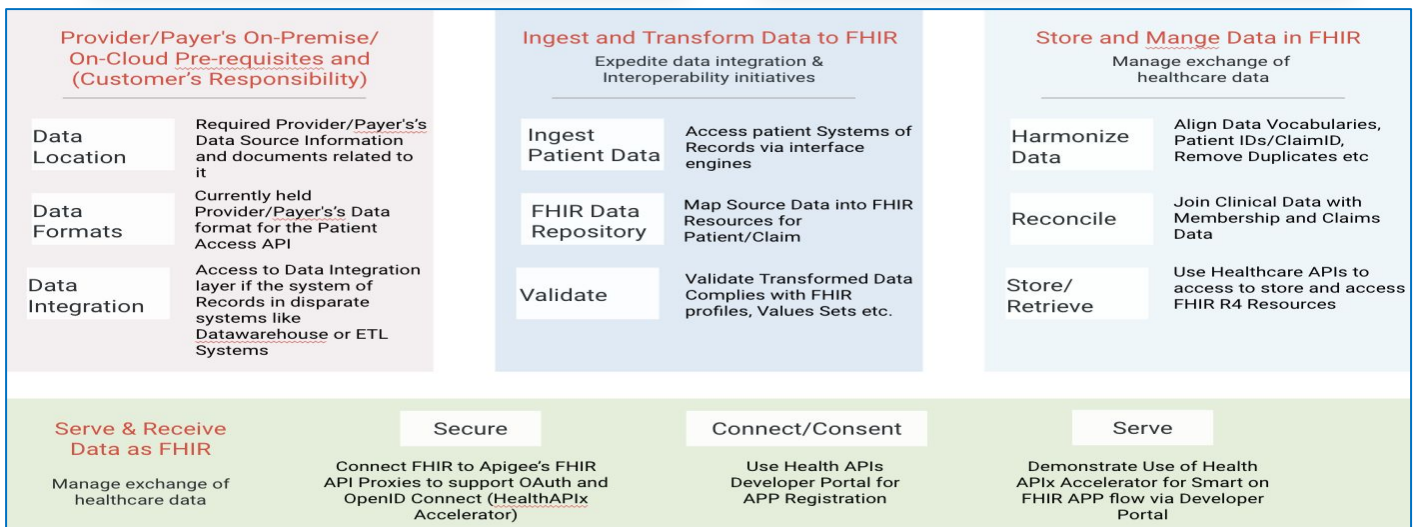
- ◆ Identify Systems of Record at Provider/Payer for Patient Info/Claim
- ◆ Ingest and Transform Data to FHIR
- ◆ Store and Manage Data to FHIR
- ◆ Serve and Manage Data as FHIR

## Tech Stack GCP Components Used for Pilot

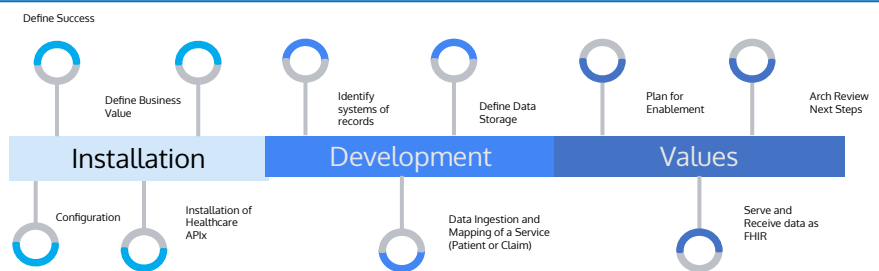
- Google FHIR Store on GCP
- Apigee Edge on Cloud
- DAC Accelerator Components

## Assumptions:

- Solution is on GCP for pilot
- Client to allocate resources for a week
- Define business success use cases before pilot



Customer Journey Plan - A shared path to your success



## About DigitalAPICraft

DigitalAPICraft, through its products and services, helps global brands establish their API Ecosystem and transform into a truly Experience Enterprise. As a leading end-to-end digital transformation partner, our API-led approach enables banking, healthcare, telecom, insurance & retail companies to offer delightful customer experience, transform business processes and boost operational efficiency.

DigitalAPICraft has been awarded "Delivery Partner of the Year for APAC 2017- Google Cloud" and is a premier Google - Apigee partner. Over three consecutive years (2020, 2019 & 2018), DigitalAPICraft is recognized as one of the fastest-growing technology companies by Deloitte in its Technology Fast 50 India and twice (2019 & 2018) in Technology Fast 500 Asia pacific rankings.

Located in USA, UK, and India, and with customers across the globe, DigitalAPICraft brings extensive product and platform experience to help enterprises with digital strategy and consulting, disruption engineering, end-to-end DevOps, experience engineering, and much more.

Visit [www.digitalapicraft.com](http://www.digitalapicraft.com) for more information



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