FHIR: Building a Facade API

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Will Schultz, Data Engineer

An interoperability project focused on building
services for sharing healthcare data with third-
party vendors.

What is FHIR?

Health Level Seven International (HL7) is a not-for-profit, ANSI-accredited standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services.

Fast Healthcare Interoperability Resources
- A set of standardized data models for healthcare
- Human readable resources
- Formats include XML, JSON & RDF/Turtle
- Discrete medical data templates: Patient, Practitioner, Procedures, Claims, et cetera

FHIR Resource Data Model

narrative

body

extensions

metadata

```
{
  "resourceType": "Claim",
  "id": "485f8afd-1ff4-450f-b1a0-2e154ace36ba",
  "text": {
    "status": "active",
    "div": "<div xmlns=\"http://www.w3.org/1999/xht
  },
  "identifier": [
    {
      "system": "http://example.com/claim-number",
      "value": "116396128"
    }
  ],
  "extension": [
    {
      "url": "http://example.com/claim-line-number",
      "valueInteger": "112228901"
    }
  ],
  "meta": {
    "versionId": "1",
    "lastUpdated": "Tue-Oct-31-11:51:52-2023"
  }
}
```

- FHIR resources have required data elements
- Extensions follow the 80% / 20% rule for use cases
- Grouped resources create a bundle. (Patient, encounter, procedure, practioner)

A RESTful Data Exchange

By using the REST architectural style, FHIR takes the best of existing health information technology and common internet standards to create a modern method of interoperability. This allows health care systems to implement FHIR without steep learning curves and leading to faster application design.

FHIR RESTful API

- Third-party applications using the FHIR API can be integrated into an EHR and feed information directly into the provider's workflow
- Utilizes the Open Authorization protocol for access
- API inputs include: EHR, IoT, Biomedical, CRM, Imaging, Billing, et cetera

Fact Sheet, The FHIR API, The Office of the National Coordinator for Health Information Technology, 2021, https://www.healthit.gov/sites/default/files/page/2021-04/FHIR%20API%20Fact%20Sheet.pdf

Better Data, Better Care

Consumer Empowerment

21st Century Cures Act for interoperability and prohibition against data blocking

- Pricing transparency creates competition in the healthcare market
- Consumers empowered to switch providers and healthcare companies based on cost
- Health systems compelled to create a better experience for the consumer

Data Quality Outcomes

Accruate patient data

- Avoid disconnected patient experiences
- Better diagnosis data
- On-demand history for immediate treatment (Medication allergies, etc.)
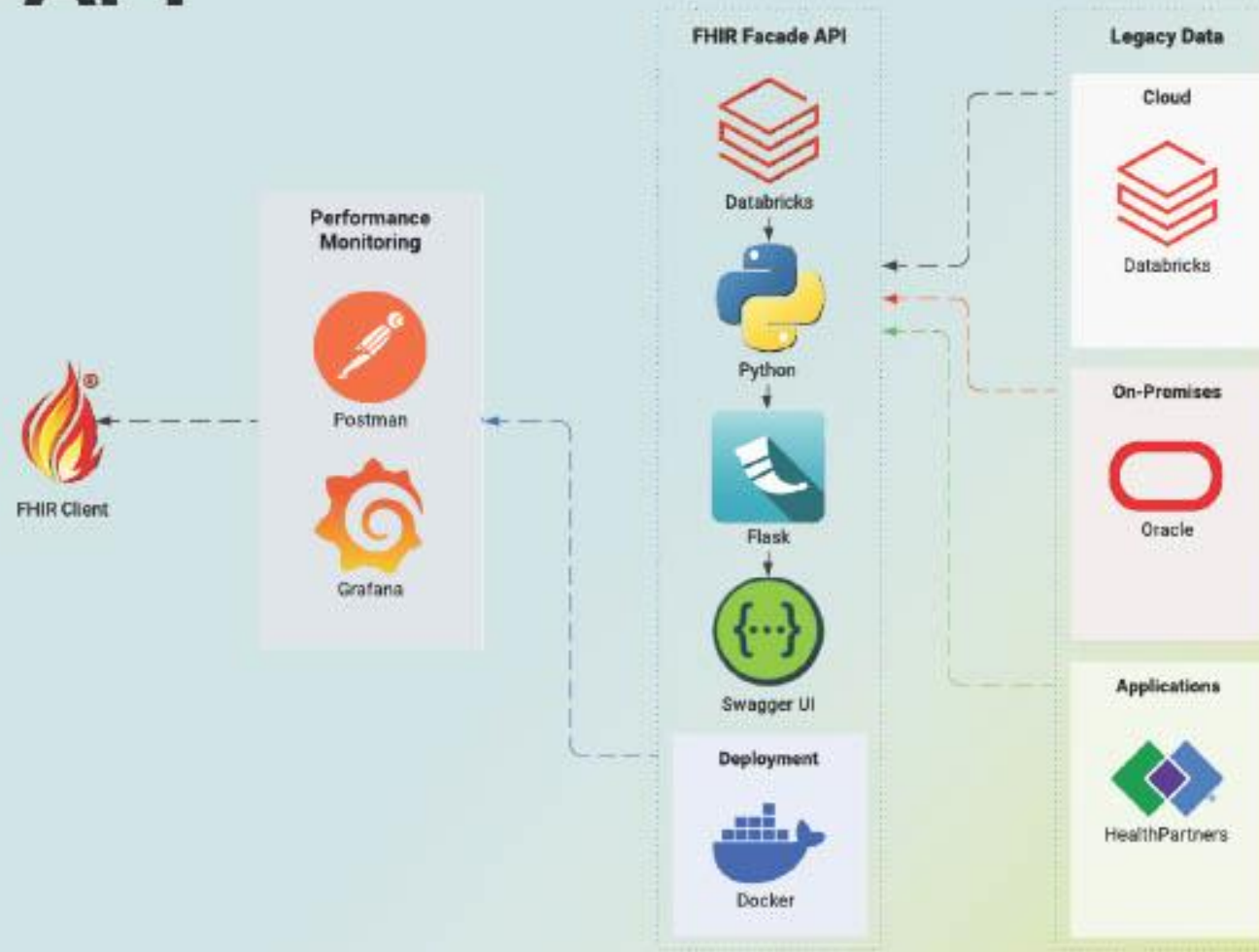
Realtime data fidelity

- Capture record changes from source at time of encounter
- Realtime feedback for data quality: reduce duplication, etc.
- Patients are billed correctly

Centralizing Data

Systems integration

- Legacy and new data in one place
- Opportunities to perform artificial intelligence, machine learning and big data analytics
- VA data sharing pledge: lower out-of-pocket expenses and patient experience

Kaiser Permanente, UPMC among 13 major health systems to sign interoperability pact with VA, Health Tech, 6 Oct. 2023, https://www.fiercehealthcare.com/health-tech/kaiser-permanente-upmc-among-13-major-health-systems-sign-interoperability-pact-va

FHIR Facade API
Architecture