FHIR on VistA
Getting data out of VistA through a FHIR API

WorldVistA Presentation
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FHIR on VistA OSEHRA open source group

- Purpose: Develop and promote standards-based FHIR APIs on the VistA platform for high-value data sets and aligning previously developed VistA APIs to the current FHIR standards to promote interoperability across platforms and systems.
- Sponsored by Perspecta
- Lead by Brian Morgan
Motivation for Building VistA FHIR API

The problem: fragmented, unstandardized healthcare data

Specialist
PCP clinic
Home care
Urgent care
Hospital
Care manager

Systems of engagement
API Gateway

Systems of insight
- Data and Insights Delivery
- Knowledge and Enrichment
- Data Integration

The conceptual solution: a systems of insight

Perspecta Proprietary Information
HealthConcourse Conceptual Architecture

System of Insight

Data Ingestion Pipeline

- Data Standardization Services
- Data Enrichment Services
- Knowledge Services
- Business Services
- Data Access Services

Surveillance and Subscription Framework

Cache (FHIR Data Store)

Access Gateway

Core Service Orchestration Platform

Systems of Record
- Registries
- Warehouses
- HIEs
- Devices
- EMRs

Systems of Engagement
- Patient portals
- Personal Health Dashboard
- Dashboards
- SMART on FHIR Apps
- Business UIs
VistA FHIR API Data Flow

Java FHIR API

HTTP Request

JSON Structure

- Get demographics for Patient
- Get demographics for all patients
- Get conditions/problems for patient
- Get other resources for patient

VistA Instance On Caché
VistA REST Tech Stack

Java FHIR API

HTTP Request

JSON Structure

VistA Instance On Caché

Get demographics for Patient
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REST Services Developed by Perspecta
OSEHRA RGNET Web Server

VistA

InterSystems Caché

Docker

AWS
VistA RPCs (getters) Exposed as Web Services

Get One Care Team
Get All Care Teams
Get Institution Info by Hospital Location Name
Get Mapped Code
Get Allergies for Patient by ICN
Get Appointments for Patient by ICN
Get Condition/Problem SCT for Patient by Traits
Get Condition/Problem for Patient by ICN
Get Patient Care Plan for Traits and Visit ID
Get Patient Care Plans for Traits
Get Patient Care Plans for ICN
Get Patient Care Plan for ICN and Visit ID
Get Demographics for One Patient by Traits
Get Patient Demographics for All Patients
Get Demographics for One Patient by ICN
Get Patient Demographics for Range of Patients
Get Diagnostic Report for Patient by ICN
Get Encounters for Patient by ICN
Get Flags for Patient by ICN
Get Goals for Patient by ICN
Get Health Factors for Patient by Traits
Get Health Factors for Patient by ICN
Get Immunizations for Patient by ICN
Get Labs for Patient by Traits
Get Labs for Patient by ICN
Get Medication Administration for Patient by ICN
Get Medication Dispense for Patient by ICN
Get Medication Statement for Patient by ICN
Get Encounter Providers for Patient by ICN
Get Procedures for Patient by ICN
Get Procedures for Patient by ICN
Get Procedures for Patient by ICN
Get Conditions/Problems for Patient
Get Other Resources for Patient

Get Procedures for Patient by ICN

The return for this getter aggregated the following data for a patient

- Surgical Procedures
- Visit Procedures
- Radiology Procedures
- Radiology Reports
VistA JSON Example

```json
{
  "Vitals": {
    "dateTimeVitalsEntered": "FEB 07, 2011@17:19:27",
    "dateTimeVitalsEnteredFHIR": "2011-02-07T17:19:27-05:00",
    "dateTimeVitalsEnteredFM": 3110207.171927,
    "dateTimeVitalsEnteredHL7": "20110207171927-0500",
    "dateTimeVitalsTaken": "FEB 07, 2011@17:19:27",
    "dateTimeVitalsTakenFHIR": "2011-02-07T17:19:27-05:00",
    "dateTimeVitalsTakenFM": 3110207.171927,
    "dateTimeVitalsTakenHL7": "20110207171927-0500",
    "enteredBy": "PROVIDER,ONE",
    "enteredById": 983,
    "enteredInError": "",
    "enteredInErrorCd": "",
    "errorEnteredBy": "",
    "errorEnteredById": "",
    "hospitalLocation": "",
    "hospitalLocationId": "GENERAL MEDICINE",
    "patient": "ZBONCAK558,LEROY603",
    "patientICN": "2670708297V958542",
    "patientld": 102251,
    "rate": 71,
    "resourceId": "V_500_120.5_49526",
    "resourceType": "Observation",
    "supplementalO2": "",
    "vitalType": "HEIGHT",
    "vitalTypeld": 8,
    "vitalTypeSCT": 50373000,
    "vitalTypeSc": "Height",
    "vitalsIen": 49526
  }
}
```
VistA FHIR API App Architecture
Available FHIR resources

**Direct Resources**
- Patient
- Care Team
- Condition
- Observation
- Location

**Containers in Patient**
- Condition
- Encounter
- Practitioner
- Observation
- Medication Statement
- Medication Dispense
- Medication Administration
- Composition

- Procedure
- Flag
- Appointment
- Allergy Intolerance
- Immunization
- Goal
- CarePlan
- Diagnostic Report
Demo 1: Patient = “EHMP Five”

Patient Viewed in CPRS
Demo 2: Patient = “EHMP Five”

FHIR on VistA APIs

- Get Patient: https://vista-fhir.demo.openplatform.healthcare/api/Patient/5000000352V586511/

- Get Conditions: https://vista-fhir.demo.openplatform.healthcare/api/Patient/5000000352V586511/Condition
Demo 3: Patient = “EHMP Five”
ClinFHIR Using FHIR on VistA APIs – ClinFHIR: http://clinfhir.com/
Demo 4: Patient = “EHMP Five”

Thank you

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