

# FHIR on VistA

Getting data out of VistA through a FHIR API

WorldVistA Presentation

June 5, 2019

# 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



The screenshot shows a web browser window displaying an article on the Open Health News website. The browser's address bar shows the URL: [www.openhealthnews.com/events/2019-03-14/fhir-vista-open-source-pr...](http://www.openhealthnews.com/events/2019-03-14/fhir-vista-open-source-pr...). The website header features the "Open Health News" logo with the tagline "The Voice for the Open Health Community". Navigation tabs include HOME, NEWS, CLIPPINGS, BLOGS, CALENDAR, RESOURCES, ABOUT US, and SPONSOR. The article title is "FHIR on VistA Open Source Project". The main text describes an OSEHRA Innovation Webinar on March 19, 2019, at 3:00pm - 4:00pm, with a link to the "FHIR on VistA Open Source Project". The presenter is identified as Brian Morgan, Senior Director, Chief Technologist at Perspecta. Two sidebars are visible: one for "HealthClinics.com" offering various services like custom hosting, local test setup, consulting, managed support, custom solutions, and custom forms; and another for "MP" providing customized Open Source EHR services, hosting, support, e-Rx, and MIPS/RAF/HCC reporting.

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HOME  
**FHIR on VistA Open Source Project.**

OSEHRA Innovation Webinar - FHIR on VistA Open Source Project

**Event Details**  
Type: Seminar/Webinar  
Date: March 19, 2019 - 3:00pm - 4:00pm  
Link: [FHIR on VistA Open Source Project](#)

This webinar will introduce OSEHRA's newest open source project group - "FHIR on VistA." The purpose of the group is to develop and promote standards-based FHIR APIs on the VistA platform for high-value data sets and align previously developed VistA APIs to the current FHIR standards to promote interoperability across platforms and systems.

OSEHRA Organizational Member Perspecta is sponsoring his new group and will contribute their existing proprietary FHIR on VistA codebase to the Open Source Community. This codebase will serve as the baseline for further development of the open source FHIR on VistA software. The project plans to produce FHIR-based VistA resources that are compliant with the most recent standards and are prioritized, and aligned, with the community's needs. In addition, this initiative will stand-up a FHIR on VistA testbed that will include a FHIR server for accessing VistA FHIR resources.

**Presenter:**  
Brian Morgan  
Senior Director, Chief Technologist  
Perspecta

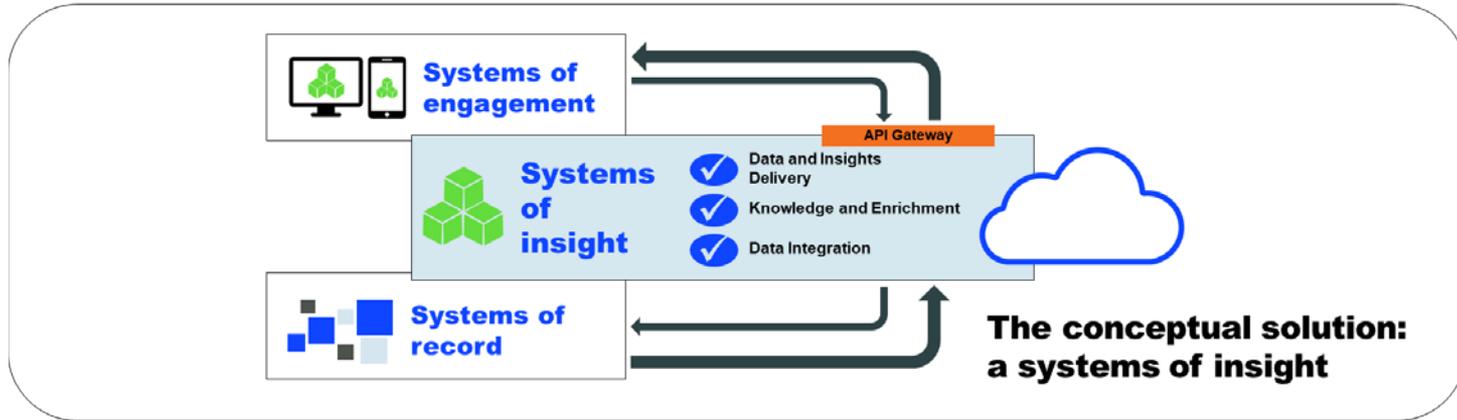
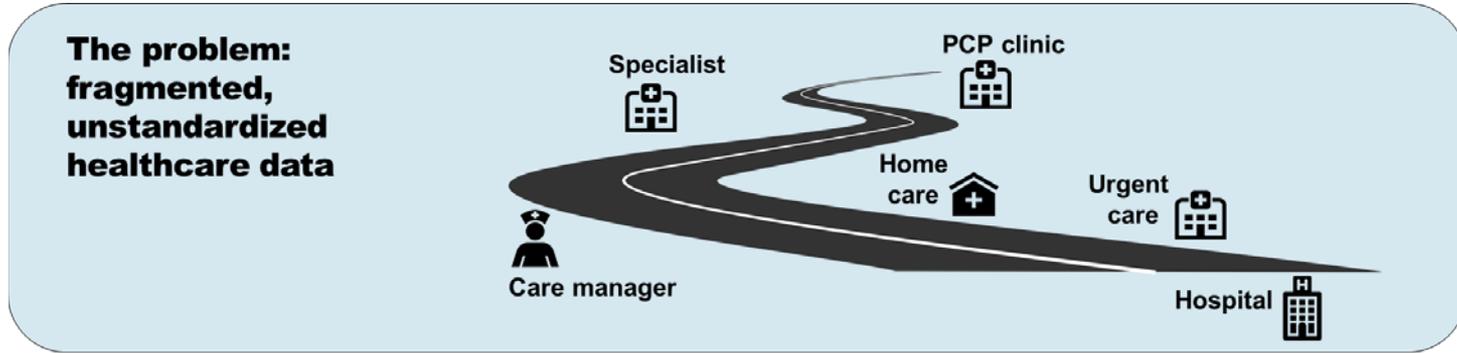
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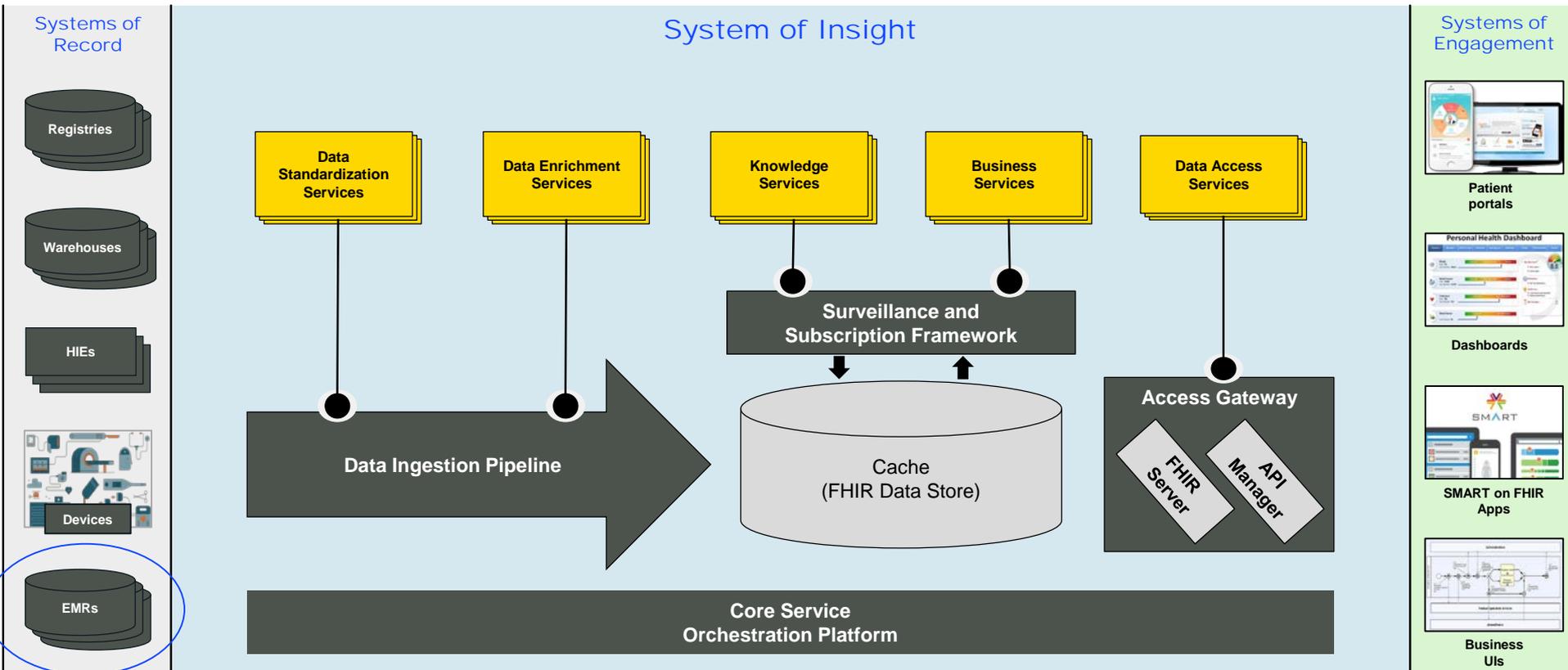
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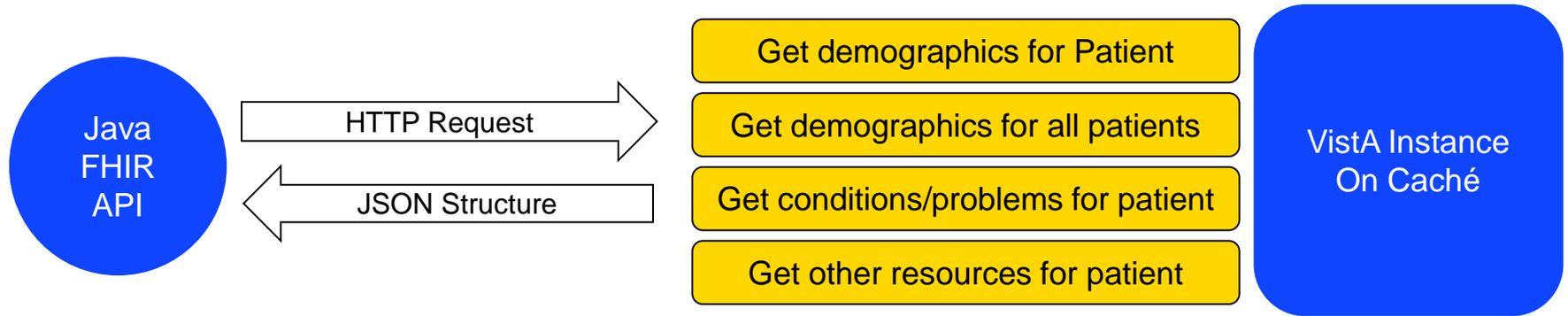
# Motivation for Building VistA FHIR API



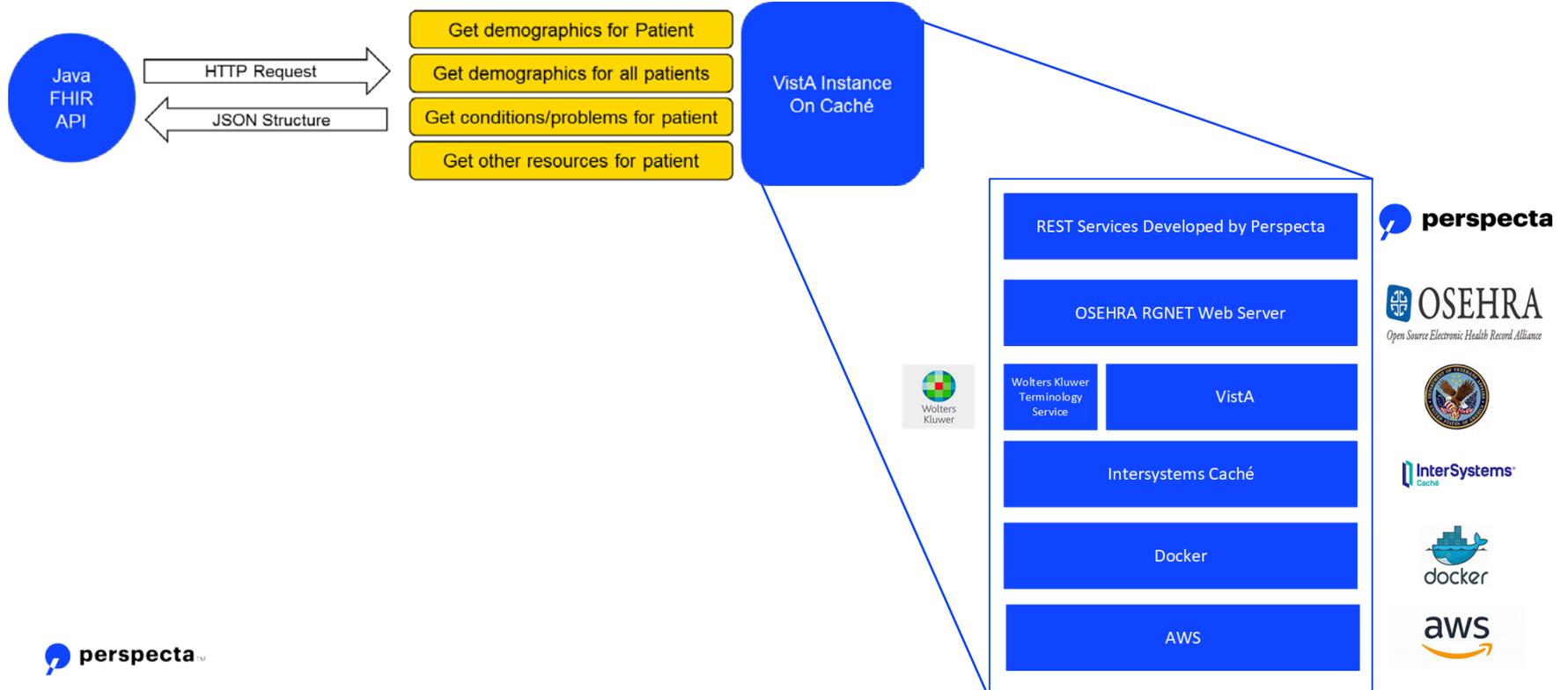
# HealthConcourse Conceptual Architecture



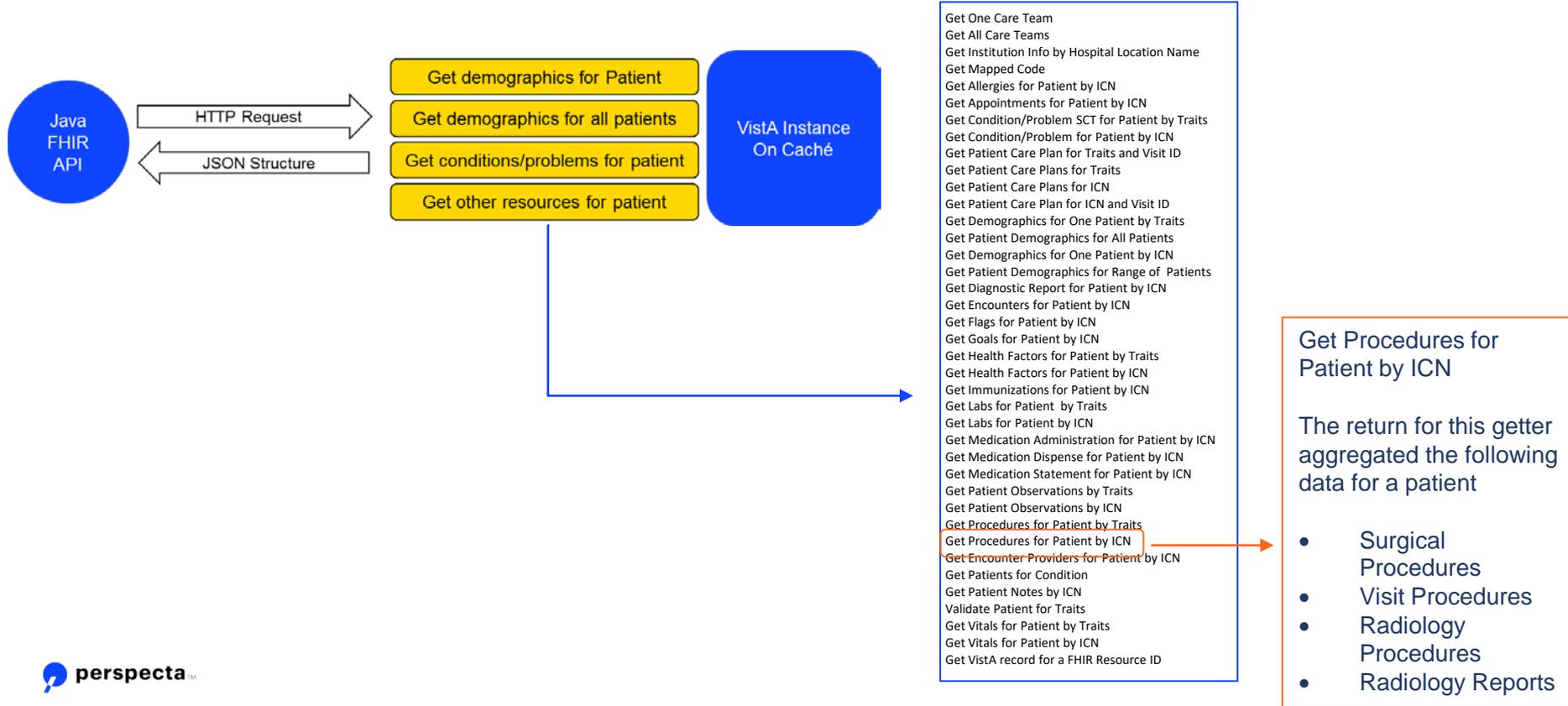
# VistA FHIR API Data Flow



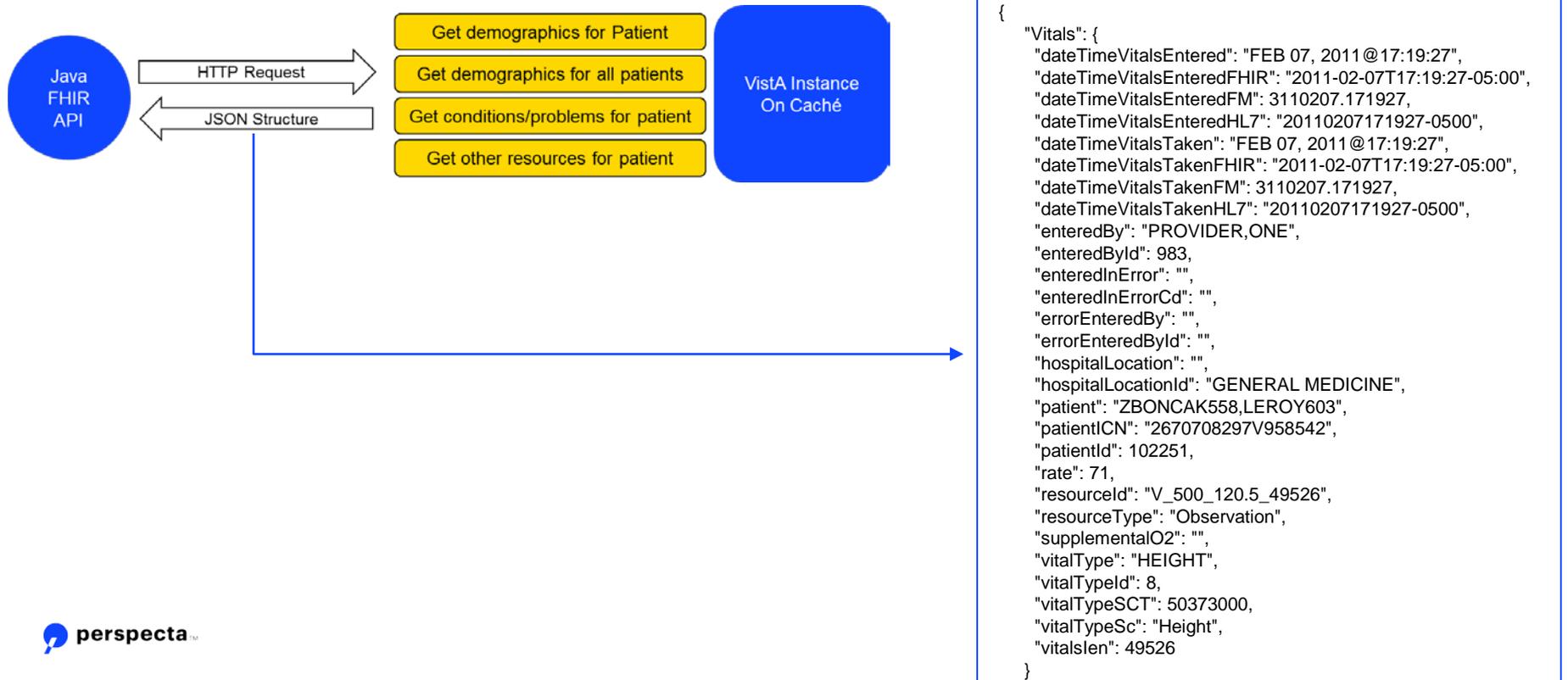
# VistA REST Tech Stack



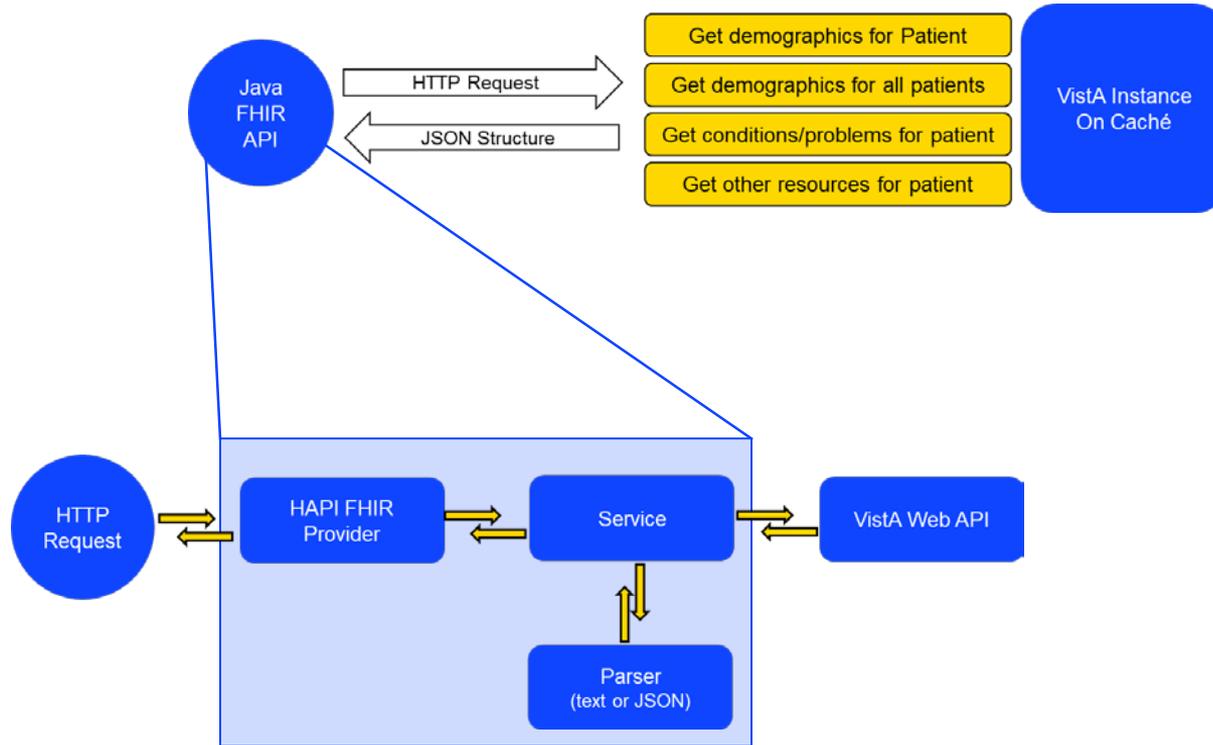
# VistA RPCs (getters) Exposed as Web Services



# VistA JSON Example



# 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

Vista CPRS in use by: Provider, Eight (vista-ssh.demo.openplatform.healthcare)

File Edit View Tools Help

**EHMP FIVE (INPATIENT)**    **NHCU NH15-B**    No PACT assigned at any VA location /  
 666-11-0005    Dec 18,1989 (29)    Provider: PROVIDER,EIGHT    (Inpatient) Attending: Provider, Ten - (Inpatient) Provider: Provider, Nine

Flag    VistaWeb    Postings  
 Remote Data       **D**

Active Problems	Allergies / Adverse Reactions	Postings
Epilepsy (SCT 84757009) Carpal Tunnel Syndrome (SCT 57406009) *Alcohol Abuse (SCT 15167005) *Malignant Melanoma (SCT 372244006) Posttraumatic Stress Disorder (SCT 47505003) Amputation Of Leg Through Tibia And Fibula (SCT 883) D/E - Amputated Left Leg (SCT 308054003) Closed Fracture Of C1-C4 Level With Spinal Cord Injury	No Known Allergies	Advance Directive Completed

Active Medications	Clinical Reminders	Due Date
No Active Medications Found	Hepatitis C risk Factor Screening Primary Care Depression Screening Evaluation of Embedded Fragments TBI Screening	Feb 02,13 DUE NOW DUE NOW DUE NOW

Recent Lab Results	Vitals	Appointments/Visits/Admissions
Cbc Blood Wc Lb #18513    Mar 14,15 Chem 7 Blood Serum Wc Lb #18513    Mar 14,15 Culture & Susceptibility Urine Wc Lb #18439 Culture & Susceptibility Swab Wound Wc Lb #18442 Sgot Blood Serum I Lb #18436    Aug 01,14 Hiv Western Blot Blood Wc Lb #18437    Aug 01,14 Cbc Blood Wc Lb #18438    Aug 01,14 Liver Function Test Blood Test Serum I Lb #18430 Hiv/Ab Blood I Lb #18431    Apr 10,10 Cbc Blood I Lb #18433    Apr 10,10 Culture & Susceptibility Swab Tibia Wc Lb #18434 Culture & Susceptibility Csf Cerebrospinal Fluid Wc Lb #1842 Culture & Susceptibility Urine Wc Lb #18425 Hepatitis C Antibody Blood Wc Lb #18419 Feb 02,10 Liver Function Test Blood Serum Wc Lb #18417 Chem 7 Blood Serum Wc Lb #18417    Feb 01,10 Cbc Blood Wc Lb #18418    Feb 01,10	T 98.8 F    Jun 15,2015 17:46(37.1 C) P 82    Jun 15,2015 17:46 R 14    Jun 15,2015 17:46 BP 158/91    Jun 15,2015 17:46 HT 72 in    Aug 31,2014 14:05    (182.88 cm) WT 467.4 lb    Oct 03,2017 00:00(212.01 kg) PN 3    Jun 15,2015 17:46 PDX 92    Mar 20,2015 17:37 BMI 63.52    Oct 03,2017 00:00	Mar 14,15 09:26    Inpatient Stay/Nhcu Sep 10,14 14:00    Mental Health    Action Required Aug 31,14 14:00    Primary Care    Checked Out Aug 01,14 14:53    Inpatient Stay/3 North Surg Aug 01,14 12:06    Emergency Room    Inpatient Appointment Apr 10,10 06:23    Inpatient Stay/Icu/Ccu Feb 01,10 10:34    Inpatient Stay/Gen Med

Cover Sheet | Problems | Meds | Orders | Notes | Consults | Surgery | D/C Summ | Labs | Reports

## Demo 2: Patient = "EHMP Five"

### FHIR on VistA APIs

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



```
{
  "resourceType": "Patient",
  "id": "5000000352V586511",
  "meta": {
    "versionId": "1",
    "tag": [
      {
        "system": "urn:dx:vista:source",
        "display": "Vista"
      }
    ]
  },
  "text": {
    "status": "generated",
    "div": "<div xmlns='http://www.w3.org/1999/xhtml'><div class='hapimheaderText'>FIVE <b>EHMP</b></div><table class='hapipropertytable'><tbody><tr><td>Identifier</td><td>5000000352V586511</td></tr><tr><td>Address</td><td><span>12345 ANY STREET</span><br/><span>ARBOR</span><span>MICHIGAN</span></td></tr><tr><td>Date of Birth</td><td><span>18 December 1989</span></td></tr></tbody></table></div>"
  },
  "identifier": [
    {
      "system": "urn:dx:vista:icn",
      "value": "5000000352V586511"
    },
    {
      "type": {
        "coding": [
          {
            "system": "http://hl7.org/fhir/identifier-type",
            "code": "SB"
          }
        ]
      },
      "value": "555-555-1234"
    }
  ],
  "name": [
    {
      "family": "EHMP",
      "given": [
        "FIVE"
      ]
    }
  ],
  "gender": "male",
  "birthDate": "1989-12-18",
  "address": [
    {
      "line": [
        "12345 ANY STREET"
      ],
      "city": "ARBOR",
      "state": "MICHIGAN",
      "postalCode": "48103"
    }
  ]
}
```

- Get Conditions: <https://vista-fhir.demo.openplatform.healthcare/api/Patient/5000000352V586511/Condition>



```
{
  "resourceType": "Bundle",
  "id": "17c327be-12c6-499b-a83e-c47f6e53d14",
  "meta": {
    "lastUpdated": "2019-06-05T07:55:14.916+00:00"
  },
  "type": "searchset",
  "total": 11,
  "link": [
    {
      "relation": "self",
      "url": "http://vista-fhir:8080/api/Patient/5000000352V586511/Condition?_format=json"
    }
  ],
  "entry": [
    {
      "fullUrl": "http://vista-fhir:8080/api/Condition/V_500_0000011_886",
      "resource": {
        "resourceType": "Condition",
        "id": "V_500_0000011_886",
        "meta": {
          "tag": [
            {
              "system": "urn:dx:vista:source",
              "display": "Vista"
            }
          ]
        },
        "code": {
          "coding": [
            {
              "system": "http://hl7.org/fhir/sid/icd-9-cm",
              "code": "V49.70",
              "display": "UNSPECIFIED LOWER LIMB AMPUTATION STATUS"
            },
            {
              "system": "http://snomed.info/sct",
              "code": "380804003",
              "display": "O/E - Amputated left leg"
            }
          ]
        },
        "subject": {
          "reference": "Patient/5000000352V586511",
          "identifier": {
            "system": "urn:dx:vista:icn",
            "value": "5000000352V586511"
          }
        },
        "onsetDateTime": "2009-09-30T00:00:00+00:00"
      }
    },
    {
      "fullUrl": "http://vista-fhir:8080/api/Condition/V_500_0000011_887",
      "resource": {
        "resourceType": "Condition",
        "id": "V_500_0000011_887",
        "meta": {
          "tag": [
            {
              "system": "urn:dx:vista:source",
              "display": "Vista"
            }
          ]
        },
        "code": {
          "coding": [
            {
              "system": "http://hl7.org/fhir/sid/icd-9-cm",
              "code": "V49.70",
              "display": "UNSPECIFIED LOWER LIMB AMPUTATION STATUS"
            },
            {
              "system": "http://snomed.info/sct",
              "code": "380804003",
              "display": "O/E - Amputated left leg"
            }
          ]
        },
        "subject": {
          "reference": "Patient/5000000352V586511",
          "identifier": {
            "system": "urn:dx:vista:icn",
            "value": "5000000352V586511"
          }
        },
        "onsetDateTime": "2009-09-30T00:00:00+00:00"
      }
    }
  ]
}
```

# Demo 3: Patient = "EHMP Five"

ClinFHIR Using FHIR on VistA APIs – ClinFHIR: <http://clinfhir.com>

The screenshot shows the ClinFHIR Launcher interface. A blue circle highlights the 'CURRENT SERVERS' section, which lists the following servers:

- Data Server: FHIR on VISA
- Performance Server: FHIR on VISA
- Terminology Server: Observation (Terminology)

Below this, there are sections for 'FHIR Links (open in new tab)', 'LPH/PHI (shown open in new tab)', and 'Other links'.

The screenshot shows the Patient Viewer interface for a patient named 'FIVE EHMP male 1989-12-18 (5000000352V586511)'. The 'Resource Types' section is active, showing a list of resource types with counts:

- Appointment: 5
- Composition: 26
- Condition: 11
- Encounter: 14
- Immunization: 1
- MedicationAdministration: 31
- MedicationDispense: 31
- MedicationStatement: 31
- Observation: 745
- Patient: 1
- Practitioner: 13
- Procedure: 25

The 'Condition resources' section is also active, showing a list of conditions:

- UNSPECIFIED LOWER LIMB AMPUTATION STATUS [V49.70]
- Illness, unspecified [R69]
- Illness, unspecified [R69]
- Illness, unspecified [R69]
- CLOSED FRACTURE OF C1-C4 LEVEL WITH UNSPECIFIED SPINAL CORD INJURY [806.00]
- EPILEPSY, UNSPECIFIED, WITHOUT MENTION OF INTRACTABLE EPILEPSY [345.90]
- BELOW KNEE AMPUTATION STATUS [V49.75]
- PROLONGED POSTTRAUMATIC STRESS DISORDER [309.81]
- MELANOMA OF SKIN, SITE UNSPECIFIED [172.9]
- CARPAL TUNNEL SYNDROME [354.0]
- ALCOHOL ABUSE, UNSPECIFIED DRINKING BEHAVIOR [305.00]

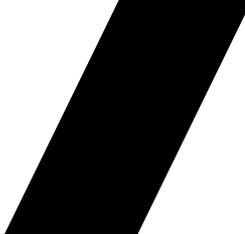
# Demo 4: Patient = "EHMP Five"

Perspecta HealthConcourse Using FHIR on VistA APIs – HealthConcourse Viewer: <https://clinical-viewer.demo.openplatform.healthcare/search>

The screenshot displays the Perspecta HealthConcourse Patient Viewer interface. The browser address bar shows the URL: <https://clinical-viewer.demo.openplatform.healthcare/patient/5000000352V586511/metadata?source=vista>. The patient name is "EHMP FIVE" with ID "5000000352V586511". Patient details include Date of Birth: 5/30/1218-1999, Gender: male, and Address: 12345 ANY STREET ANN ARBOR, MICHIGAN 48103.

The main content area is titled "Metadata" and contains a table with the following data:

FHIR Resource	Last Month	Last 6 Months	Last 12 Months	Total Records	Sources
AllergyIntolerance	0	0	0	0	0
Appointment	0	0	0	3	1
CarePlan	0	0	0	0	0
CareTeam	0	0	0	0	0
Composition	0	0	0	26	1
Condition	0	0	0	11	1
Encounter	0	0	0	14	1
FamilyMemberHistory	0	0	0	0	0
Flag	0	0	0	0	0
Goal	0	0	0	0	0
Immunization	0	0	0	1	1
MeasureReport	0	0	0	0	0
MedicationRequest	0	0	0	0	0
MedicationStatement	0	0	0	31	1
Observation	0	0	0	745	1
Procedure	0	0	0	25	1
ProcedureRequest	0	0	0	0	0
QuestionnaireResponse	0	0	0	0	0
RequestGroup	0	0	0	0	0



# Thank you

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951 764 5242

