HL7® FHIR® DevDays

JUNE | 2023

Microsoft FHIR Server implementation to support SMART on FHIR and U.S. g(10) requirements

Jared Erwin, Microsoft Corp.

HL7 FHIR DevDays 2023 | Hybrid Edition, Amsterdam | June 6–9, 2023 | @HL7 | @FirelyTeam | #fhirdevdays | www.devdays.com

ORGANIZED BY firely | HL7 International

Who am I?

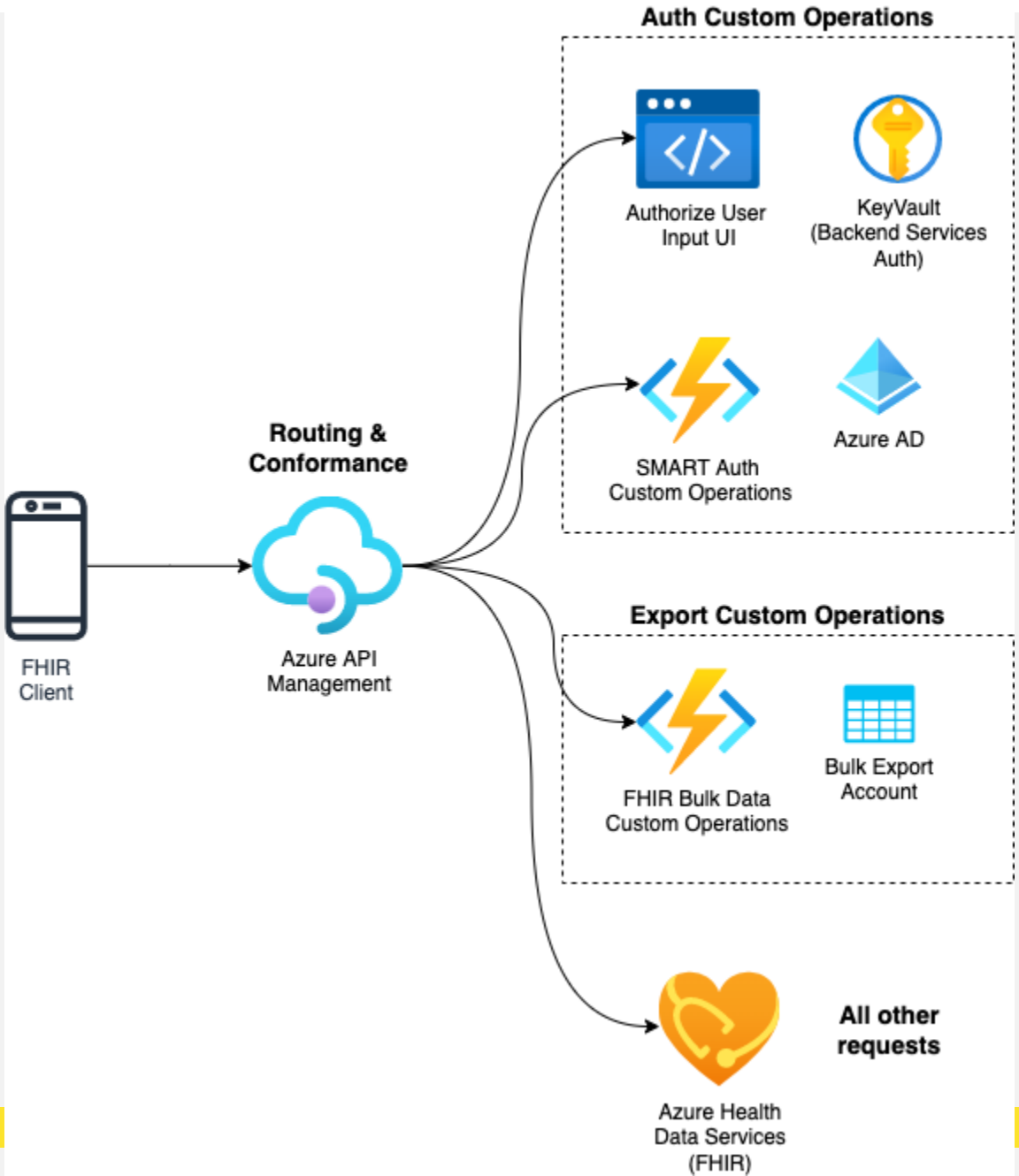
- Jared Erwin
- Senior Software Engineer at Microsoft
  - Azure Health Data Services – FHIR Server

Overview of g(10)

- What is g(10)?
  - Set of certification requirements for Health IT certification in the USA
    - https://www.healthit.gov/test-method/standardized-api-patient-and-population-services
  - Designed to improve access to health care data
  - Driven by the 2015 21st Century Cures Act and ONC Final Rule
  - Relies on FHIR, US Core and SMART on FHIR
  - Went into effect Dec 2022
- Inferno test suite

Challenges integrating with existing IDP

- SMART on FHIR
  - Scope syntax
  - How to get fhirUser identity to the FHIR API
  - Performant queries when restricting data access
- Bulk data/export requirements, 384 encryption
- Missing data requirement in US Core


Auth Custom Operations
Authorize User Input UI
KeyVault (Backend Services Auth)
SMART Auth Custom Operations
Azure AD
Routing & Conformance
FHIR Client
Azure API Management
Export Custom Operations
FHIR Bulk Data Custom Operations
Bulk Export Account
All other requests
Azure Health Data Services (FHIR)

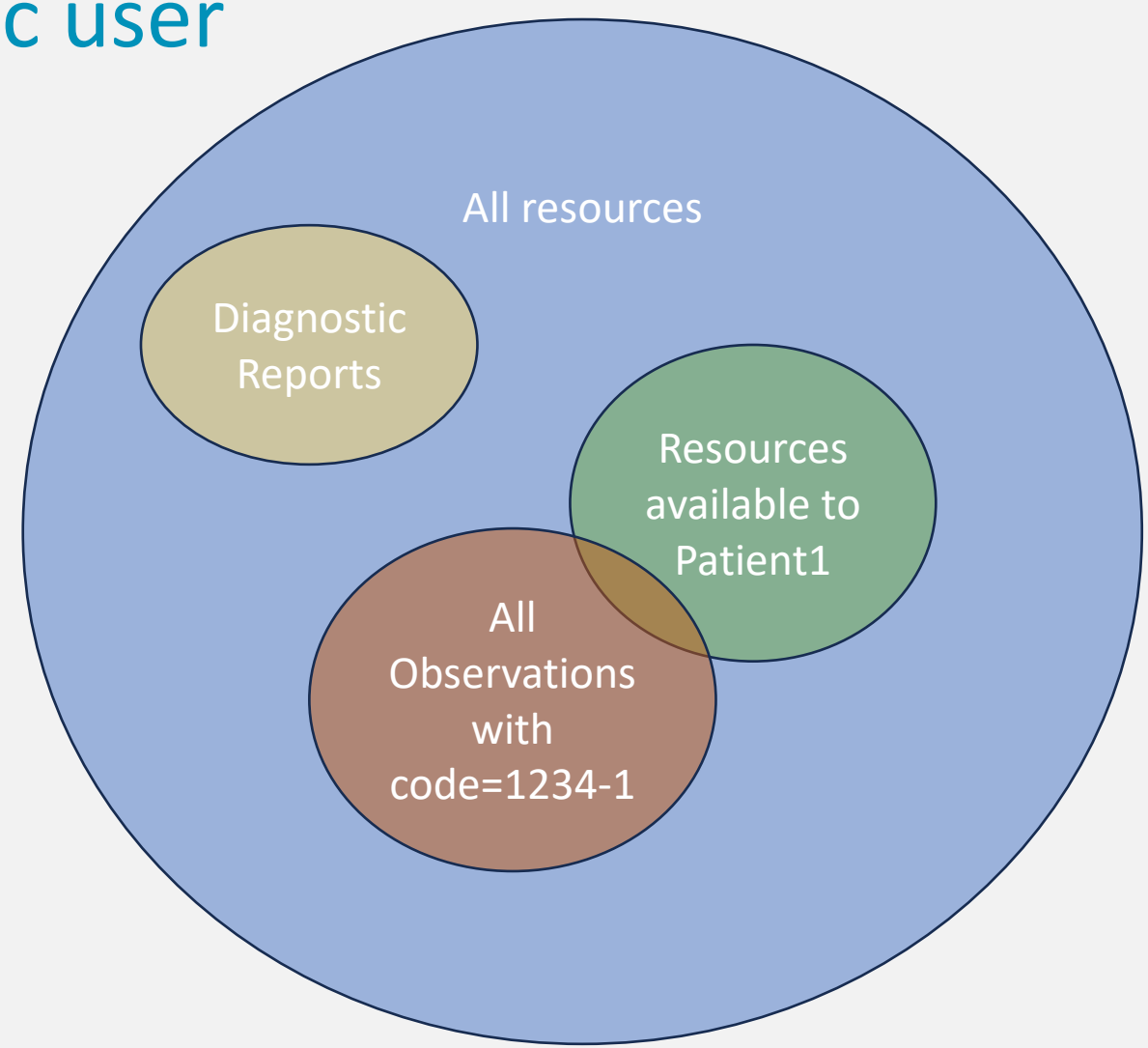
fhirUser information

- SMART indicated fhirUser shall be available in the id_token
- We included the same claim in the access token

Limit access to data by specific user and scope

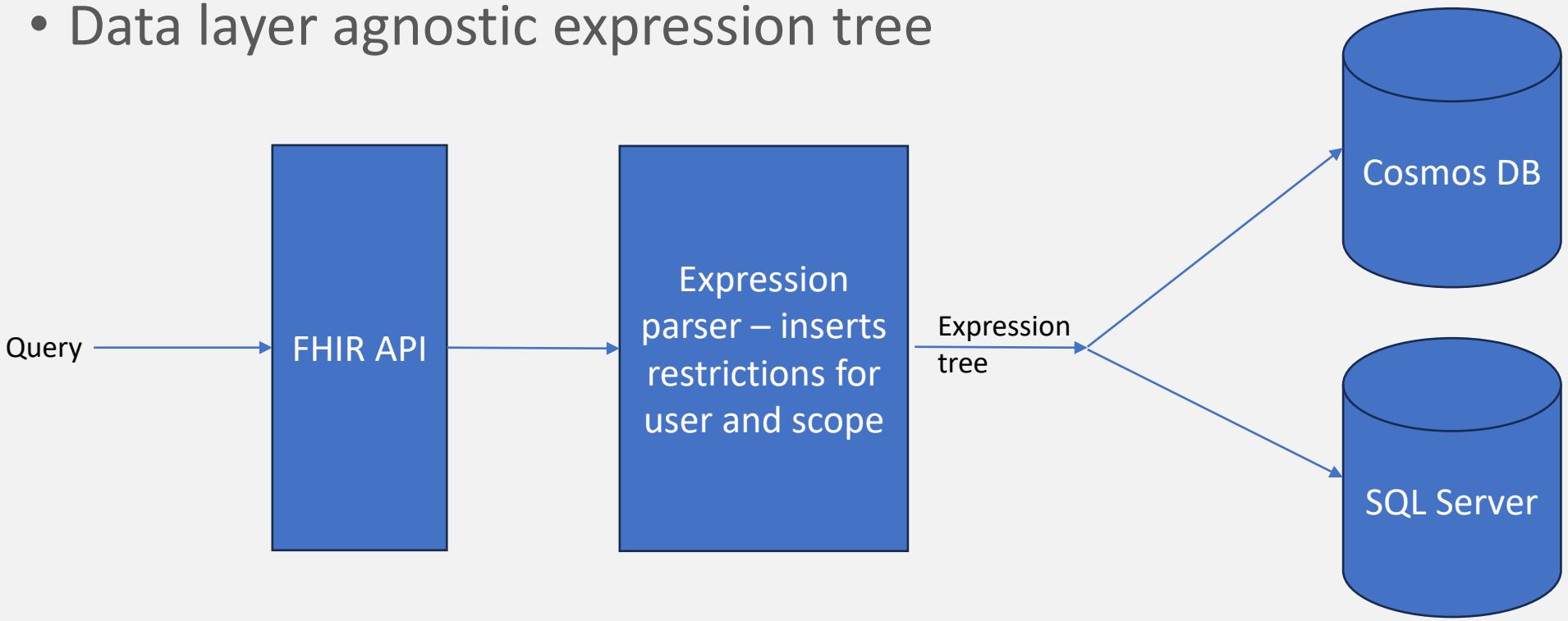
- /Observation?code=loinc|1234-1
- fhirUser=Patient1
- Scope=patient/Observation.read

- Scope=patient/DiagnosticReport .read



Performant queries with restricted access

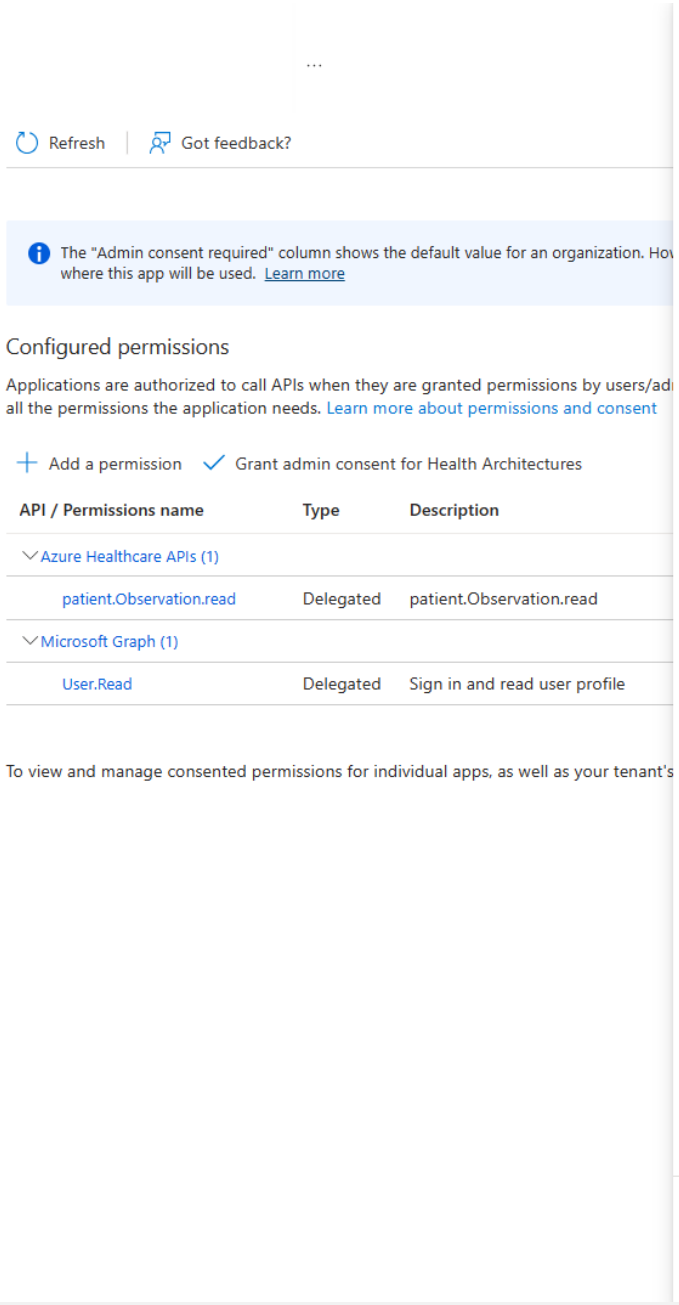
- Ensure the restrictions are processed by the data layer
- Data layer agnostic expression tree

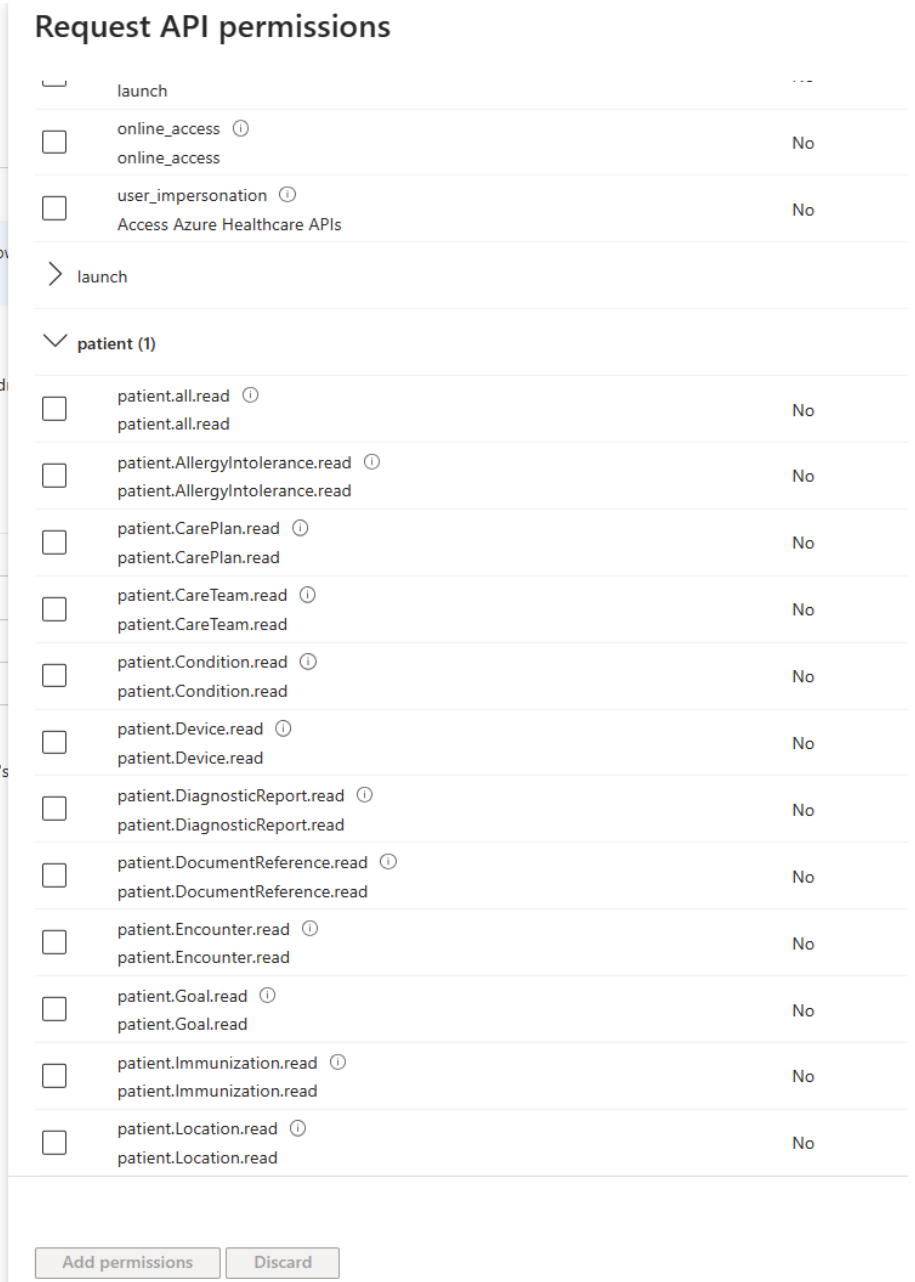


Azure Active Directory limitations

- Scope syntax
  - / and *
  - patient/*.read = patient.all.read
- ~~384 Encryption for bulk data~~

Registering a new client app





Missing data requirement

```
"participant" : [
  {
    "role" : [
      { "coding" : [
        {
          "system" : "http://terminology.hl7.org/CodeSystem/data-absent-reason",
          "code" : "unknown",
          "display" : "unknown“
        }
      ]
      }
    ],
    "member" :
   .
   .
   .
```

HL7.FHIR.US.CORE\Missing Coded Data Example - JSON Representation - FHIR v4.0.1

- Typically we would return data as we received it
- This requires a modification to the FHIR resource and a performance hit

Overview of Azure g(10) solution

- Azure Health Data Services Samples
  - azure-health-data-services-samples/samples/patientandpopulationservices-smartonfhir-oncg10 at main · Azure-Samples/azure-health-data-services-samples · GitHub

Summary

- FHIR resource server is wrapped with other components
- The Identity provider is important!
  - We can’t always choose the IDP
    - It may be pre-existing
    - There may be other organizational priorities dictating the identity provider
  - Some communication between IDP and FHIR is outside the spec
    - In our case fhirUser in the access token

Q&A

Contact

- During DevDays, you can find / reach me here:
  - Via Whova App – Speaker's Gallery
  - jaerwin@microsoft.com
  - https://www.linkedin.com/in/jarederwin/
  - ..

ORGANIZED BY