

# Intro to HealthCare Interoperability

Workshop  
[caelestinus.tech](http://caelestinus.tech)





# Contact



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# Agenda

1 **Digital Health**

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2 **IRIS For Health**



3 **Hands-on!**

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4 **Q&A**



# Digital Health

Environment

# Digital Health



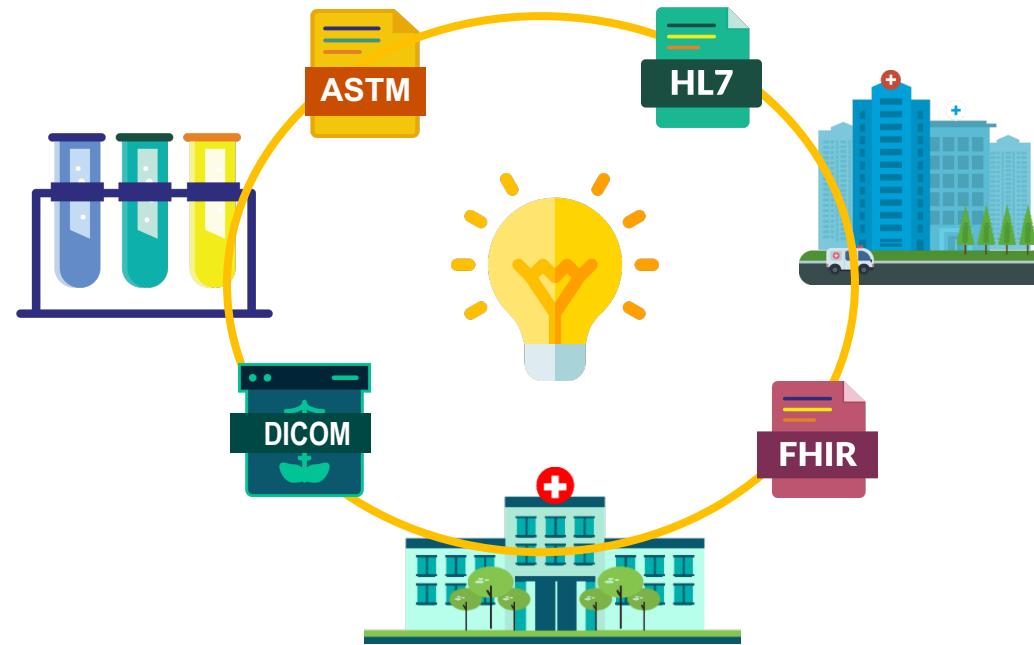
## Patients

- Participate
- Self-care
- Preventive
- Digital ecosystem



## Enable Innovations

- Existing systems: HIS, LIS, PACS, Pharma, Logistics, etc.
- Interoperability
- Performant & reliable



## Clinicians / Organizations

- Provide best-tools
- Better service, cost-effective
- Clinical decision support, predictions, etc.





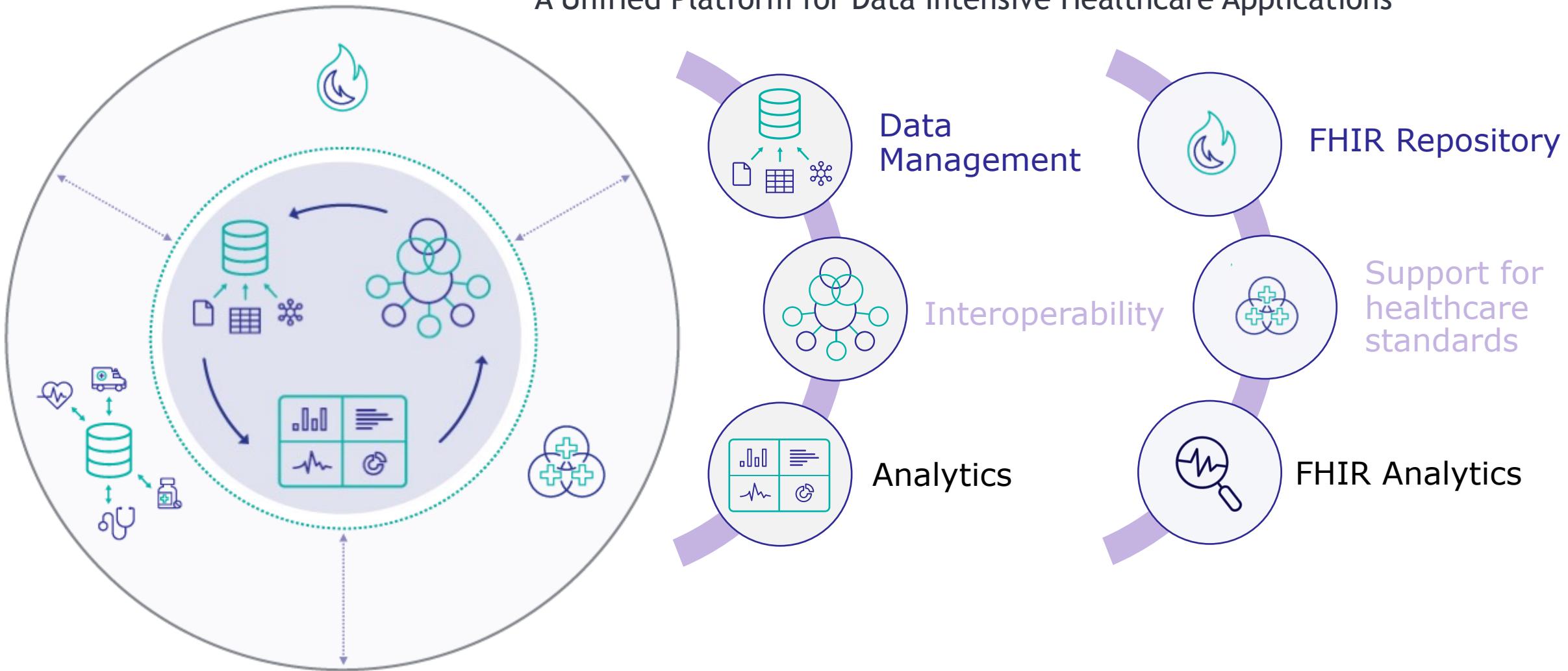
# **IRIS For Health**

Quick Intro

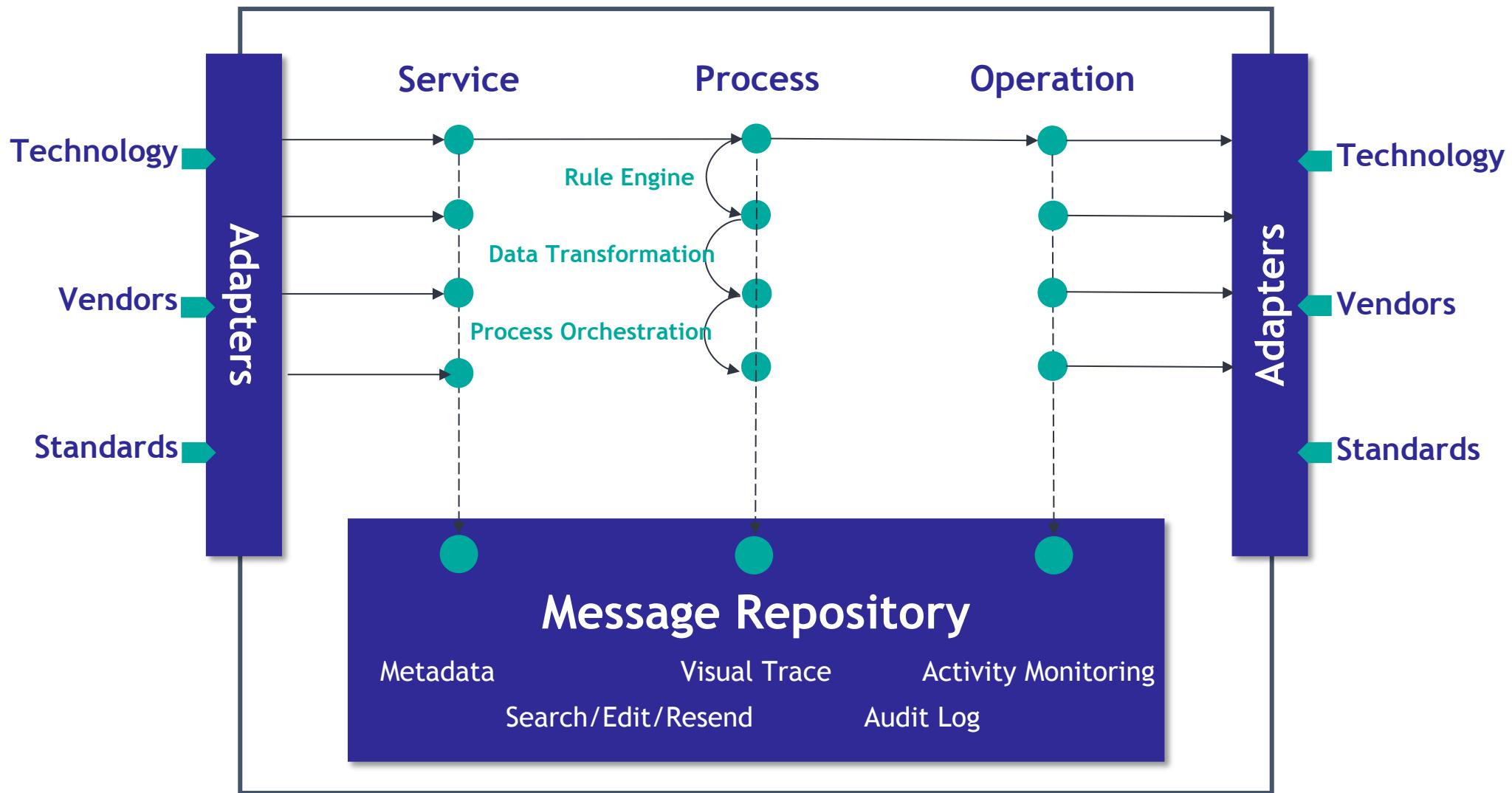
# InterSystems IRIS for Health



A Unified Platform for Data Intensive Healthcare Applications



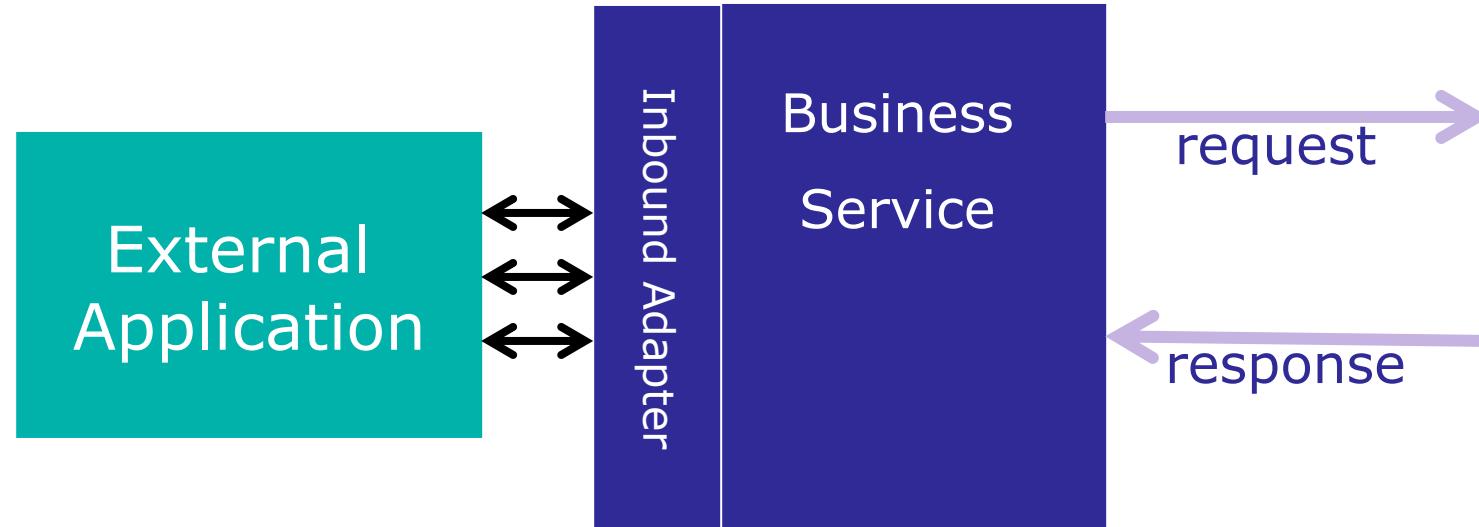
# Interoperability Framework





# Business Service

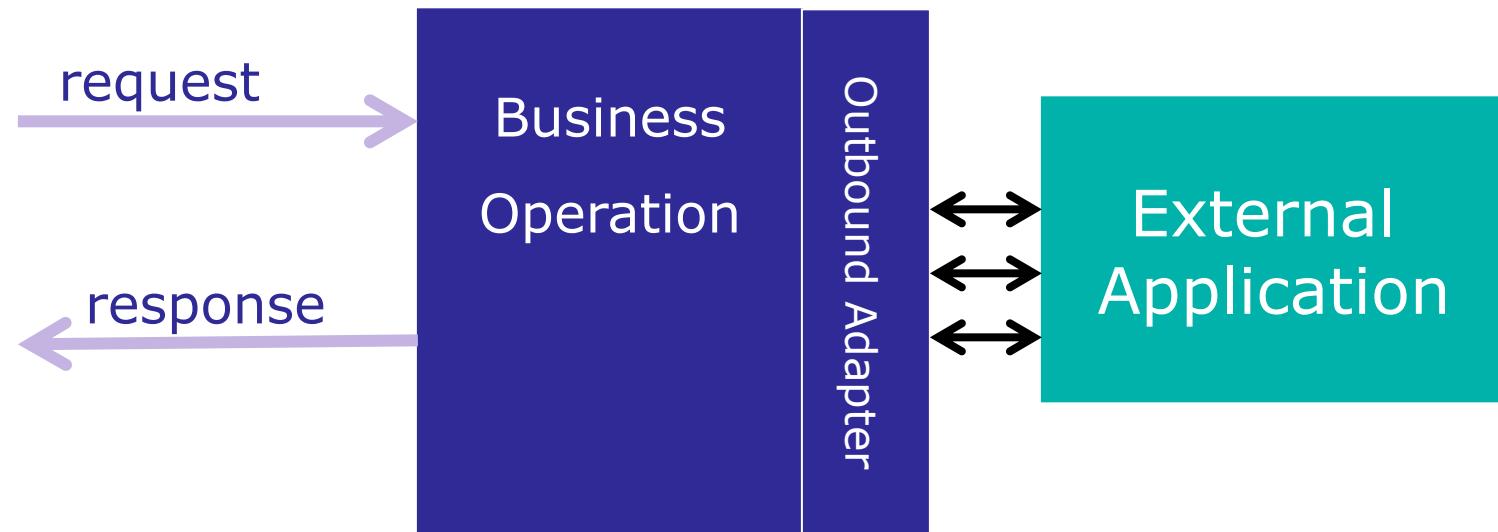
- Accepts information from outside world.
- Interoperability transactions begin in a Business Service.
- Adapters can connect to: SOAP, JDBC, HL7, TCP, Files, DICOM, REST, Kafka, MQTT, etc.





# Business Operation

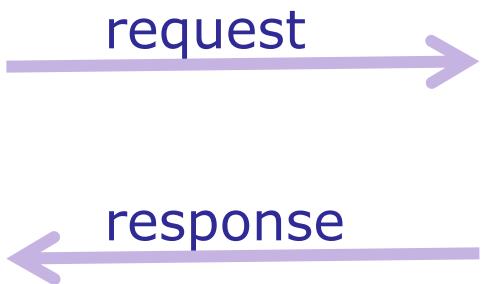
- Communicates with outside world
- e.g. query data from external DB, send HL7 data through TCP, call an external SOAP / REST service.



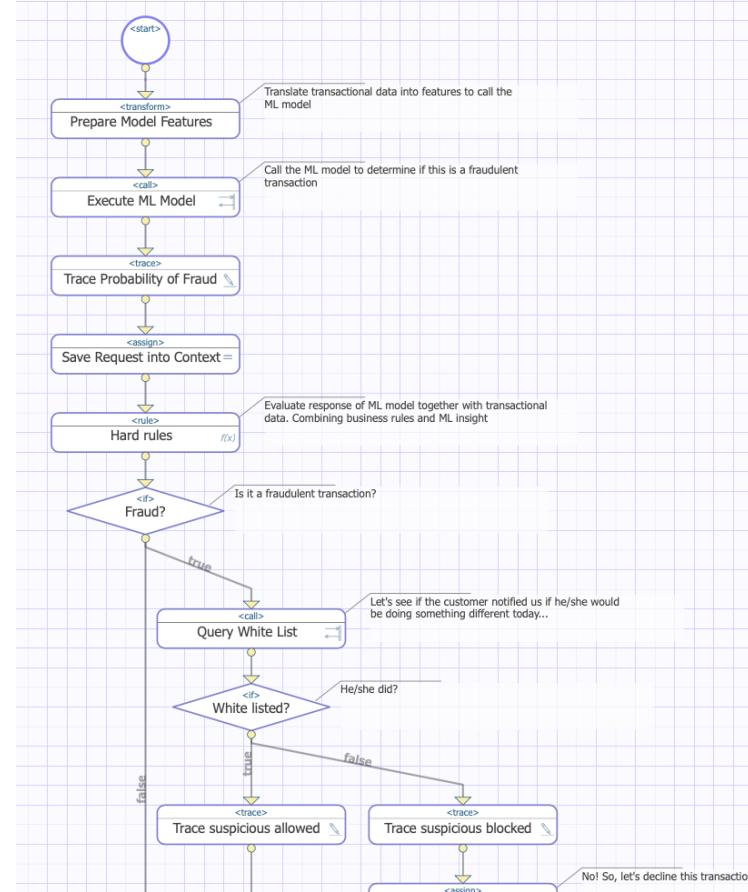


# Business Process

- Provides logic and flow control.
- Message routing.



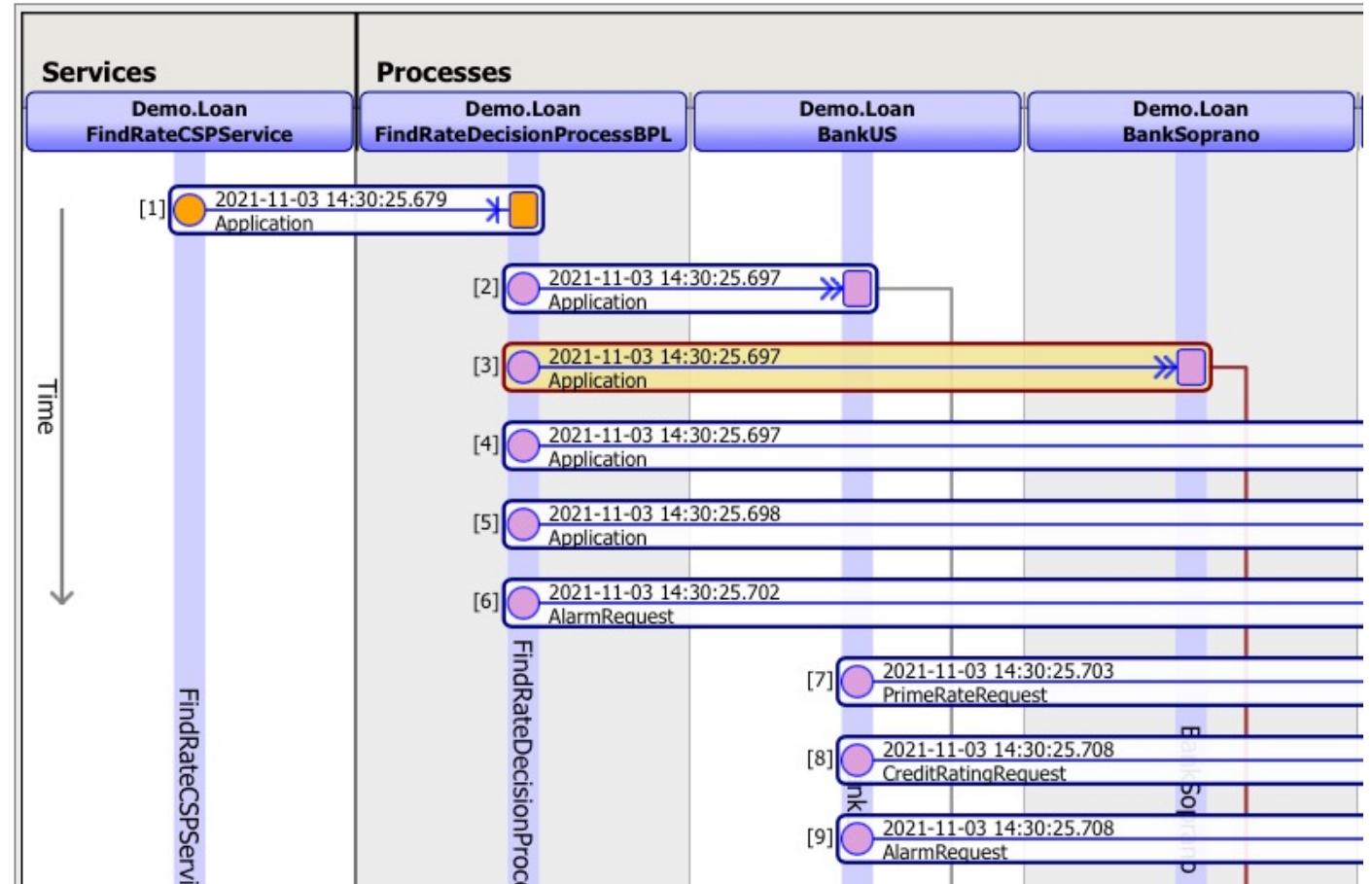
BPL





# Messages

- Communication between components
- Persistent
- Sync / Async



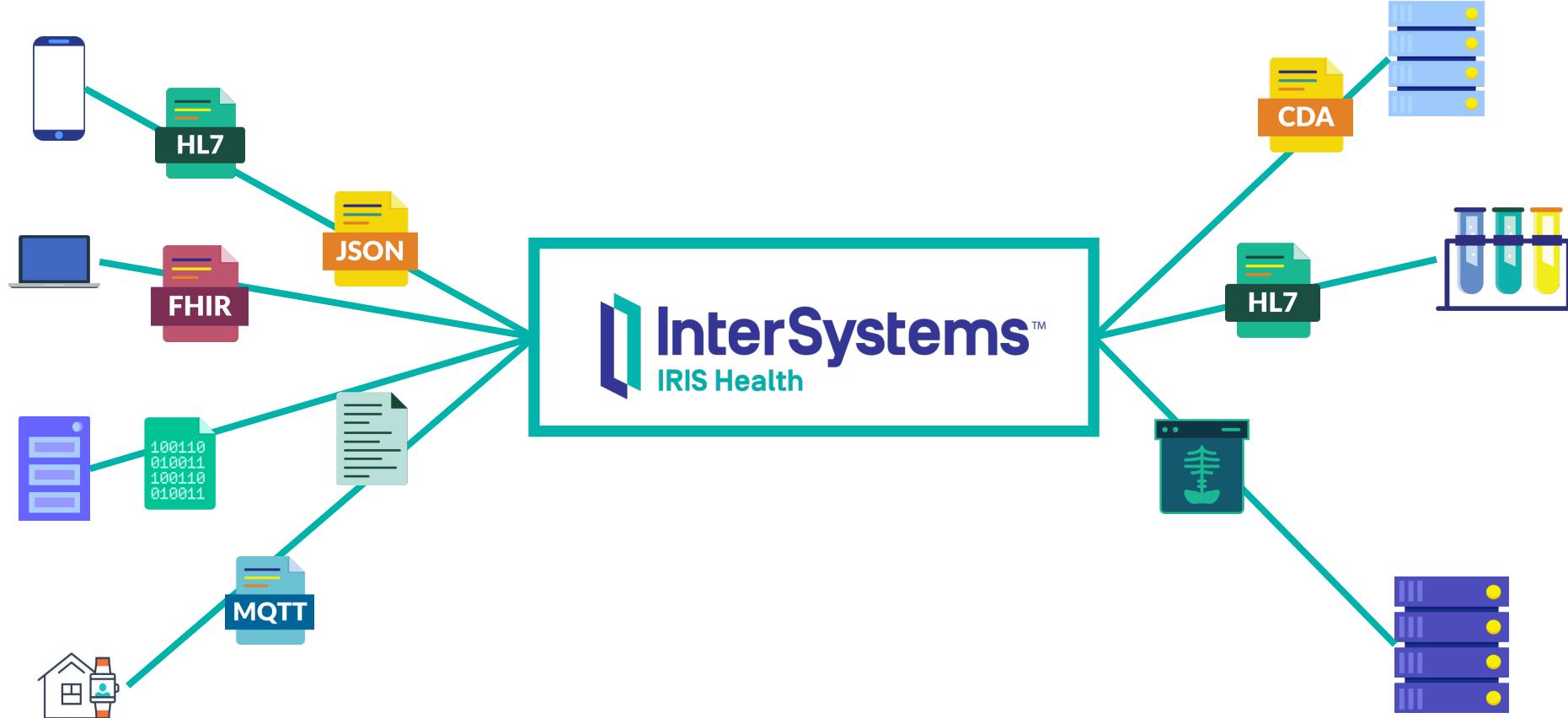


# Hands-on

[github.com/intersystems-ib/workshop-healthcare-interop](https://github.com/intersystems-ib/workshop-healthcare-interop)



# Basics



- Healthcare interoperability standard
- Evolution: HL7v2, HL7v3, CDA + web technologies + APIs

## Resources

- Administrative / clinical resources
- Semantic Interoperability
- *Bundles*

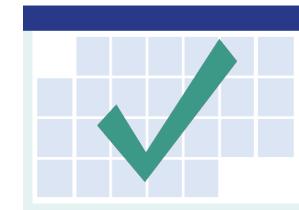
## APIs

- Interaction mechanisms
- Search
- CRUD
- Operations (e.g. `$everything`, `$current-allergies`)

**JSON / XML**



Devices



Appointments



Patient



Medication

...

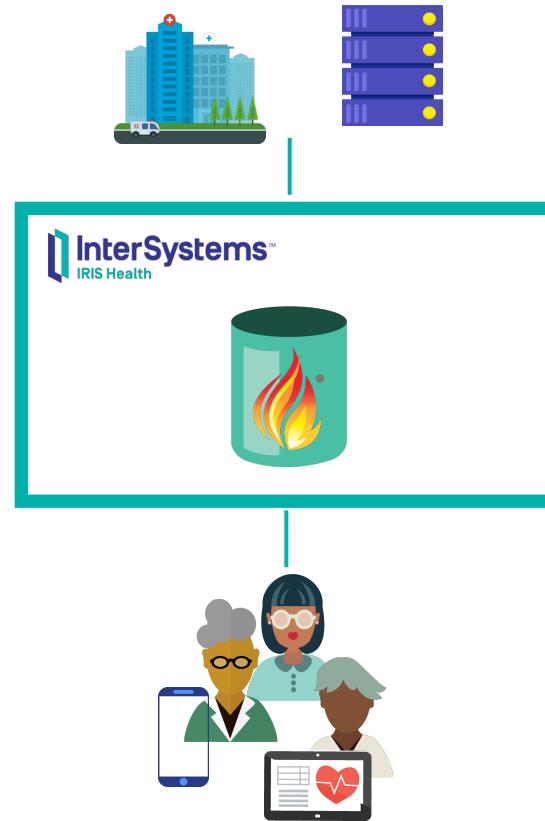
## FHIR Gateway

- Bridge among FHIR applications



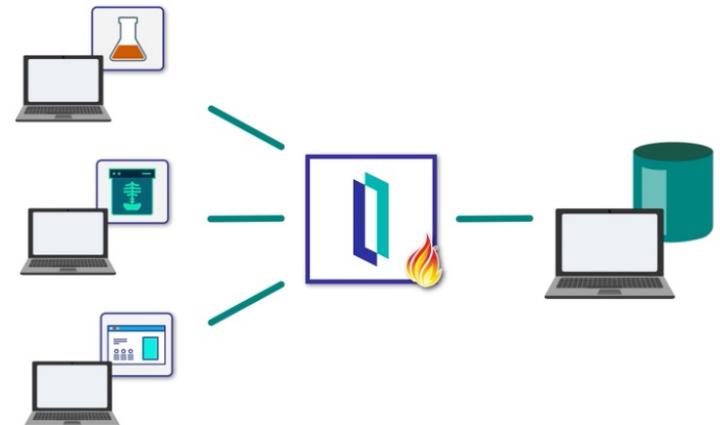
## FHIR Repository

- Store FHIR resources in database and handle FHIR APIs



## FHIR Façade

- Build a FHIR Façade as an interface to interact with other systems





FHIR Server  
(Resource Repository)

e.g. storing FHIR resources in a repository

FHIR Interoperability

e.g. handling FHIR requests in an interoperability production

# InterSystems FHIR Server

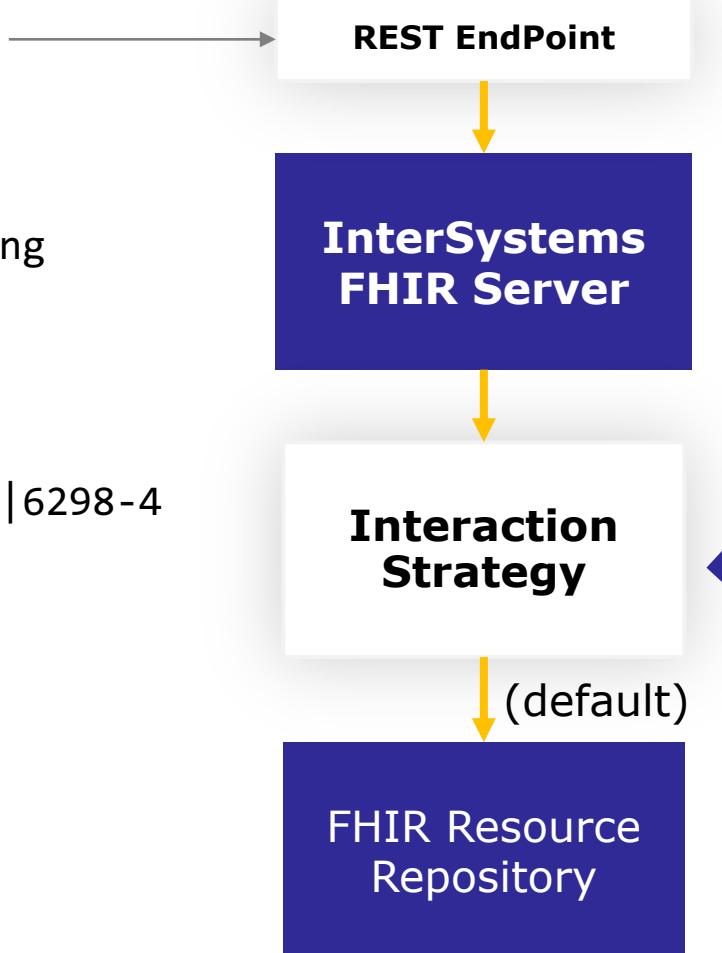


(CapabilityStatement)  
GET /metadata

GET /Patient/255/\$everything

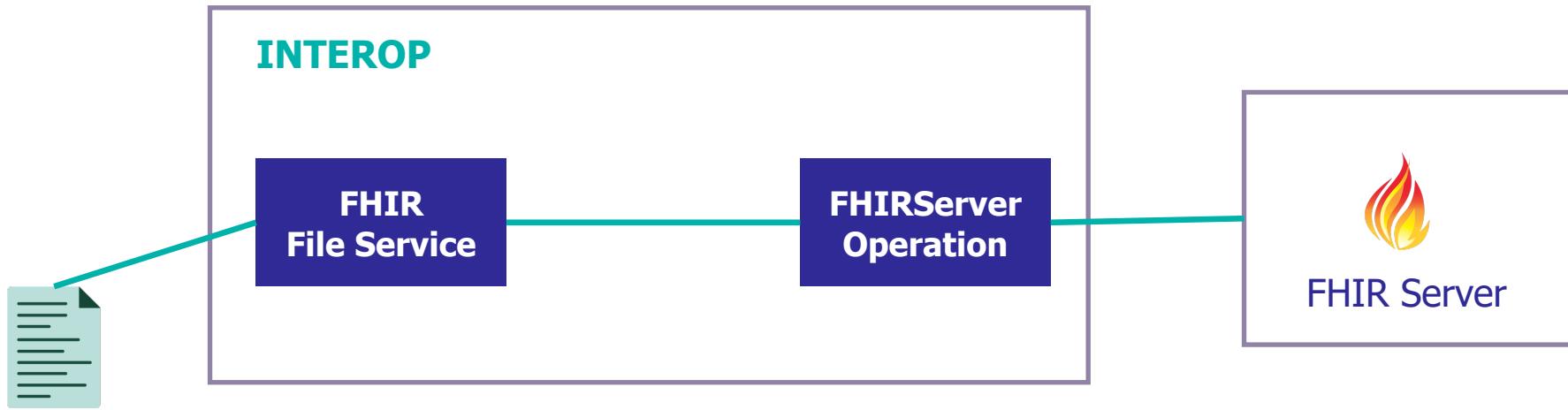
POST /Observation

GET /Observation?  
code=http://loinc.org|6298-4  
&\_count=10

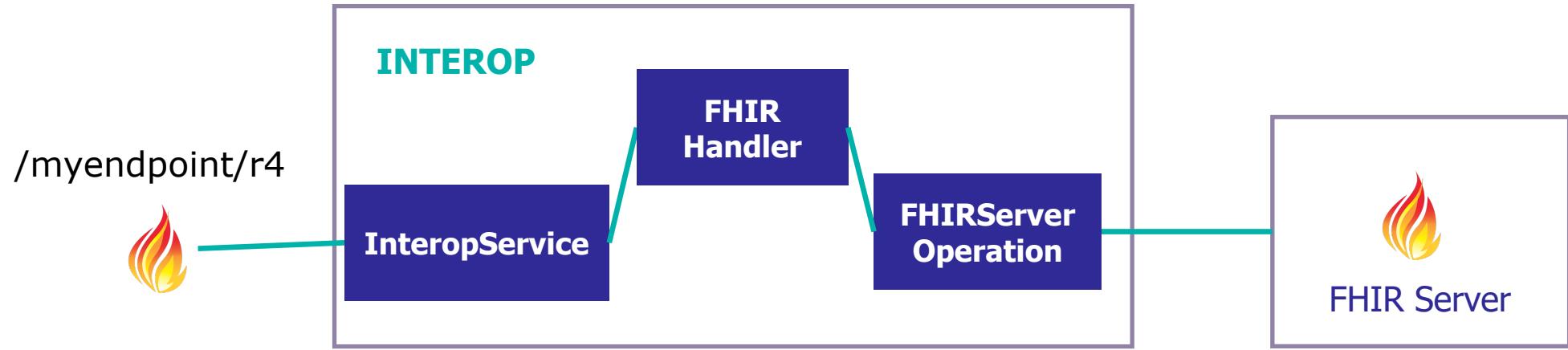


- Modify CapabilityStatement
- Request pre-processing
- Request post-processing
- Custom FHIR operations
- Personalize *Bundle* processing
- FHIR Façade

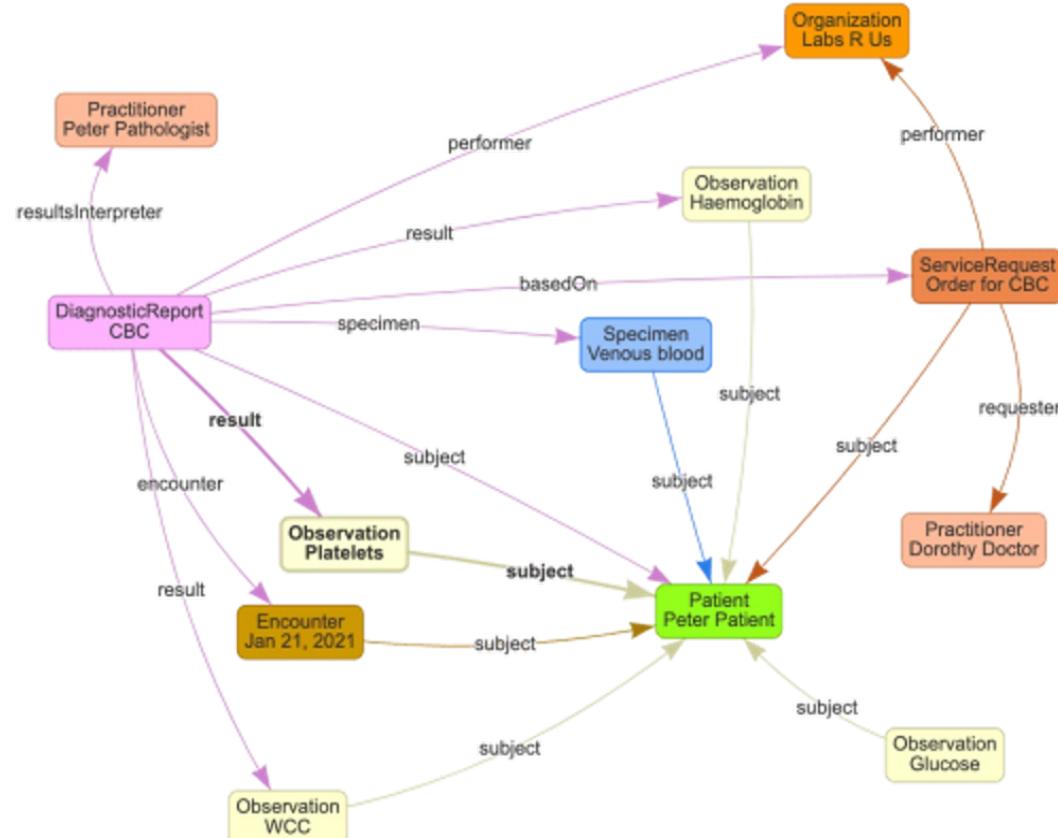
# FHIR Client



# FHIR Request Processing

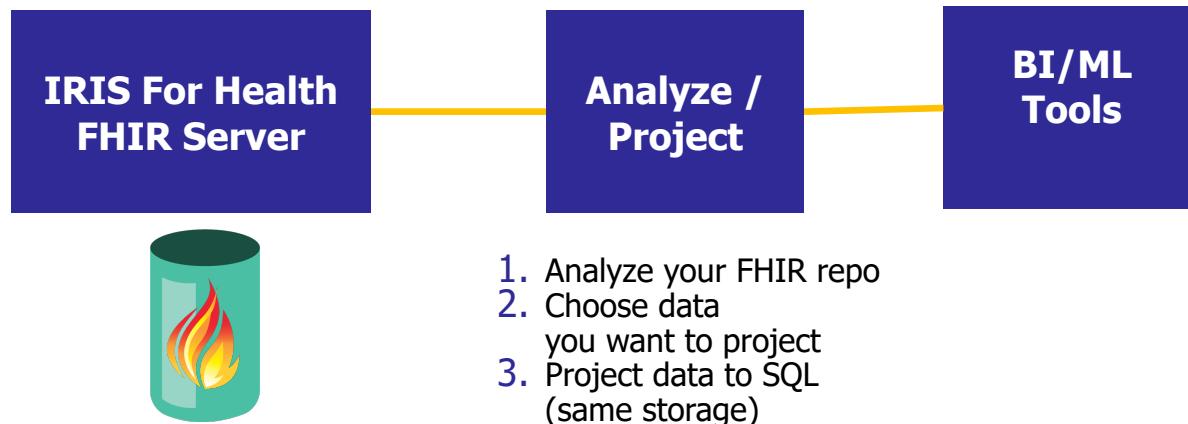


# FHIR Analytics: Challenge





# FHIR Analytics: FHIR SQL Builder



# Online Resources



## Documentation

[docs.intersystems.com](https://docs.intersystems.com)

The screenshot shows the InterSystems Documentation website. The top navigation bar includes links for Learning, Documentation, Community, Open Exchange, Global Masters, Certification, and Partner Directory. A search bar is also present. Below the navigation, a banner for "InterSystems IRIS for Health 2021.2" is displayed. The main content area features a grid of documentation categories:

- Getting Started
- Release Information
- Deployment
- Administration
- Architecture
- Security
- Development
- Interoperability
- Healthcare Interoperability
- Analytics & Data Science
- First Looks
- All Documentation
- Class Reference

A "Feedback" button is located on the right side of the grid.

## Learning

[learning.intersystems.com](https://learning.intersystems.com)

The screenshot shows the InterSystems Learning website. The top navigation bar includes links for Learning, Documentation, Community, Open Exchange, Global Masters, Certification, and Partner Directory. A guest access message and language selection are also present. The main content area features a large banner with the text "INTERSYSTEMS ONLINE LEARNING" and "Self-paced materials to help you build and support the world's most important applications." Below the banner are four learning paths:

- Get an overview of InterSystems products
- Try a learning path or resource guide
- Interested in live training?
- Learn the latest

## Developer Community

[community.intersystems.com](https://community.intersystems.com)

The screenshot shows the InterSystems Developer Community website. The top navigation bar includes links for Learning, Documentation, Community, Open Exchange, Global Masters, Certification, and Partner Directory. A search bar and user login options are also present. The main content area displays a post by Peter Monteiro titled "Reading the header information from a SOAP outbound adapter call". The post includes a screenshot of a SOAPUI tool showing a request and response with header details. Other sections of the page include "InterSystems resources", "Contest", and "Join the contest".

# Thank you