



What's New, What's Next

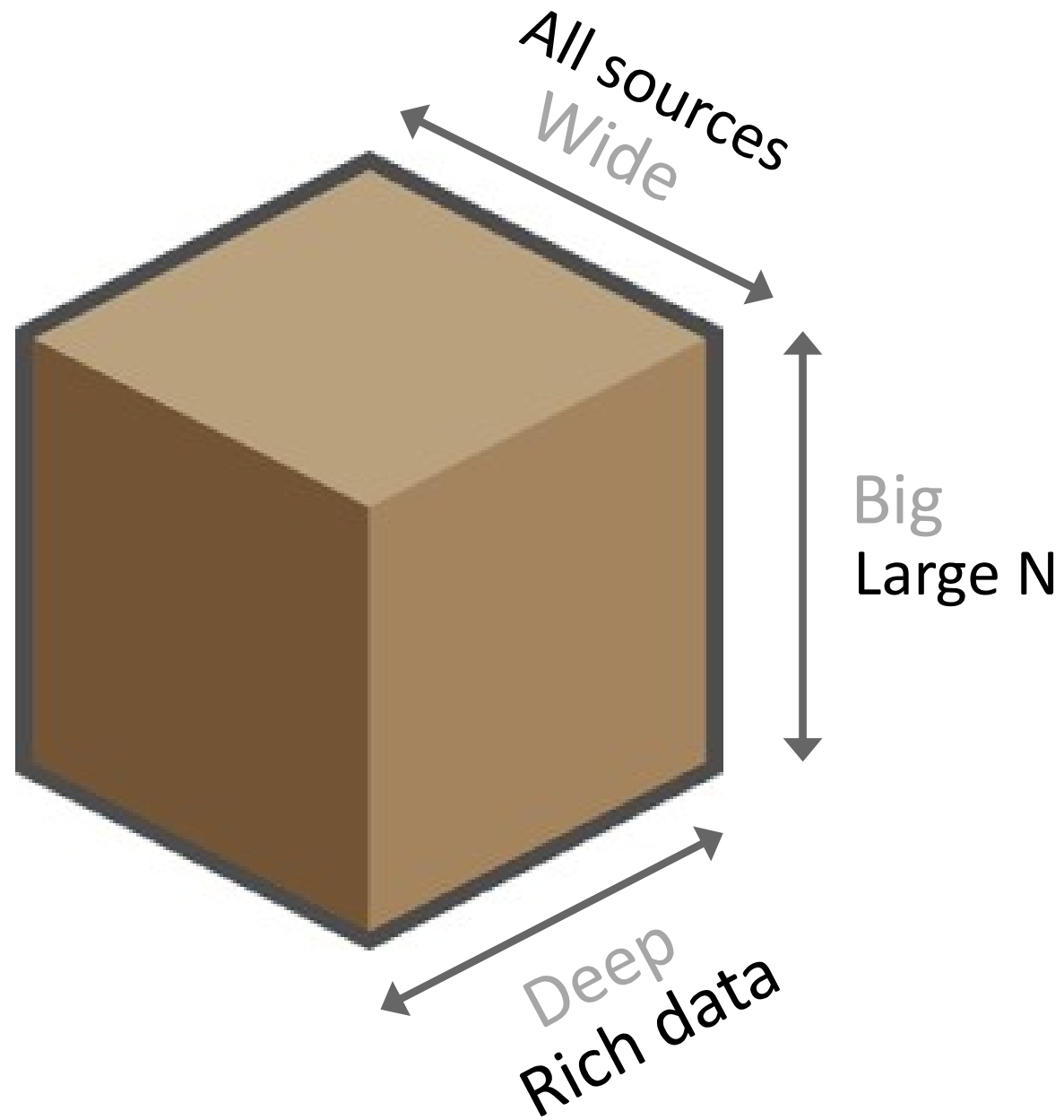
InterSystems HealthCare

Jonathan Teich

HealthShare CMIO and Director, Product Management



All the Data



Healthcare is at the confluence of three major forces



Economic



Consumer



Technological



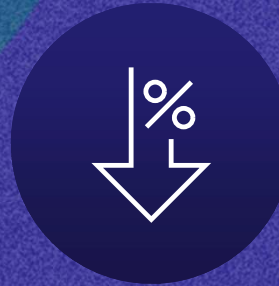
Buyer perspective



Economic



**Aging
population**



**Thin
margins**



**Staffing and
supply chain
pressures**



**New
payment
models**



Consumer



Anytime



Anywhere





Technological



**320M
Wearables**



**Cloud / Everywhere
computing**



**Chatbots, AI,
Virtual Reality**

Trends in Healthcare and Health IT 2022



Use Cases
PA, Risk Adjust,
QM



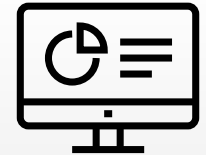
Volume Up/
Workers Down
Distributed Care



Consumerism
/Patient Roles
Apps, Websites,
Plans



Extended Data
Supply Chain,
SDOH,
Community



Big
Data/Cloud/FHIR
Mergers, Covid,
AI

Strategic Themes



Flexibility
Platform and
Solutions



**Performance
/ Capacity**



Multi-Capable
Analytics



High-Value
Use Case
Solutions



**Extended
Data**



TCO



HealthShare 2022 drivers



- **Technologies:** Cloud, FHIR, AI/ML, larger data sources
- **Use cases:** individual and population
 - Prior auth, quality, HEDIS, epidemics and disasters, regulatory, community-wide...
- **Novel data:** resources, supply chain, SDOH, community, hybrid
- **Volume up / workers down** = efficiency and coordination needed
- **Consumerism** and **patient-facing** apps and websites
- Cost



HealthShare Strategic Themes

- **Flexibility, configurability** and **upgradability** for platform and solutions
 - Cloud, services, low-code, interchangeable parts
- **Performance** and **capacity**
- High-value **use case solutions** and solution templates
- **Actionable analytics** and **advanced notifications**
- Rapid **extended data** capabilities
- ↓ **Cost and time** to install/upgrade

Custom apps



FHIR Apps

Sources

EMRs

Claims

Devices

Economic/Social

Registries/HIEs

Labs / Omics

Life Science



Care Planning and Coordination



Patient Engagement



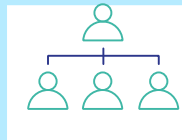
Health Connect



Unified Care Record



Provider Directory



Clinical Visualisation



Advanced Rules and Notifications



Data Access and Exchange



Analytics



Patient Index



Data Strength

The most trusted source of aggregated, interoperable data

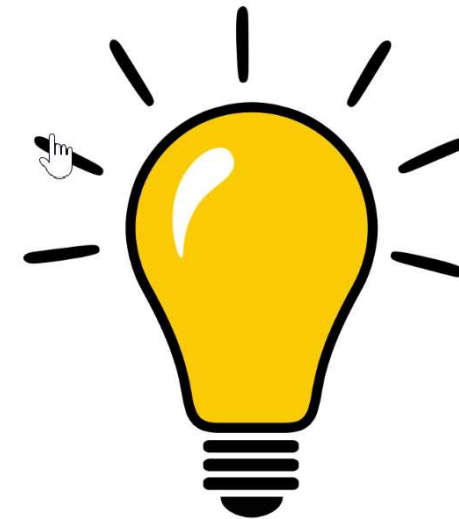


*Speed – Capacity – Reliability
– Manageability – Flexibility*

Healthcare Solutions



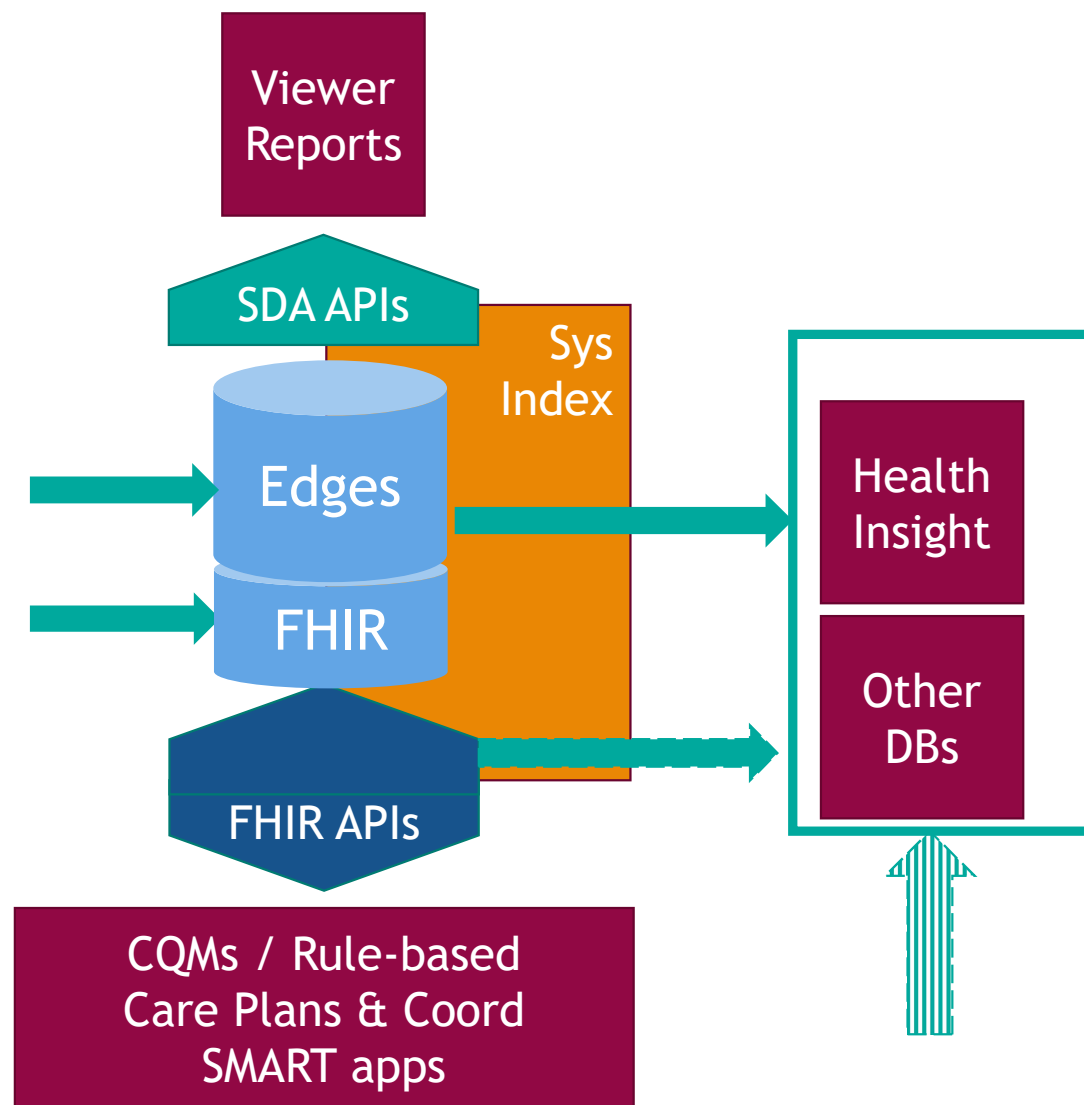
Superior added value on top of "just data"



*Views – Summaries –
Coordination
Logic – Analysis – Notifications*

Unified Care Record

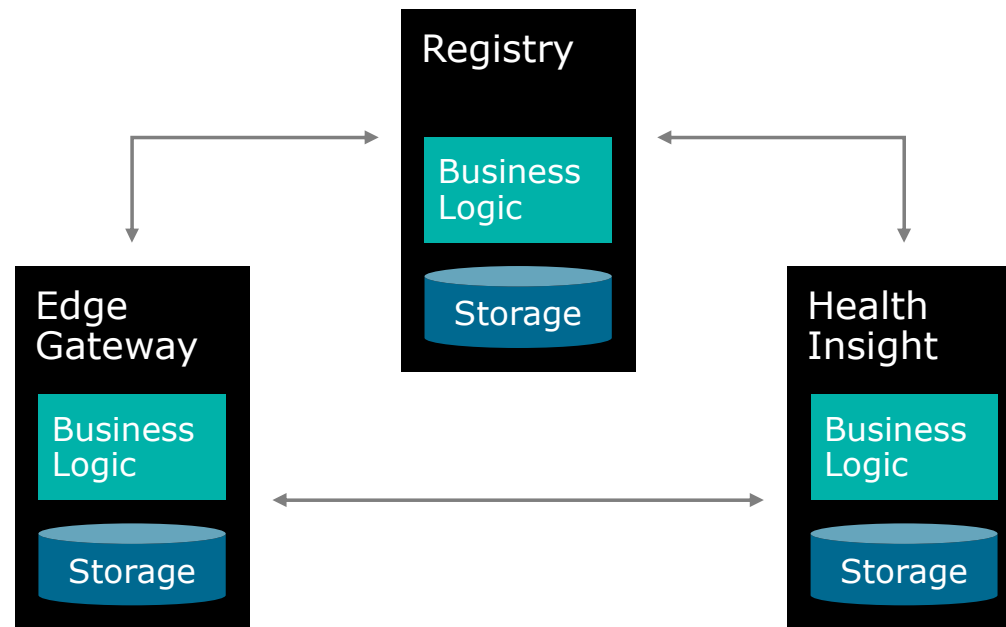
- Ongoing performance and capacity enhancement
- Data expansion
 - PDex, X12 claims and benefits, CARIN
 - All expansions realised in FHIR and relational
 - External and non-patient data, social, community
- Expanded cloud presence and access



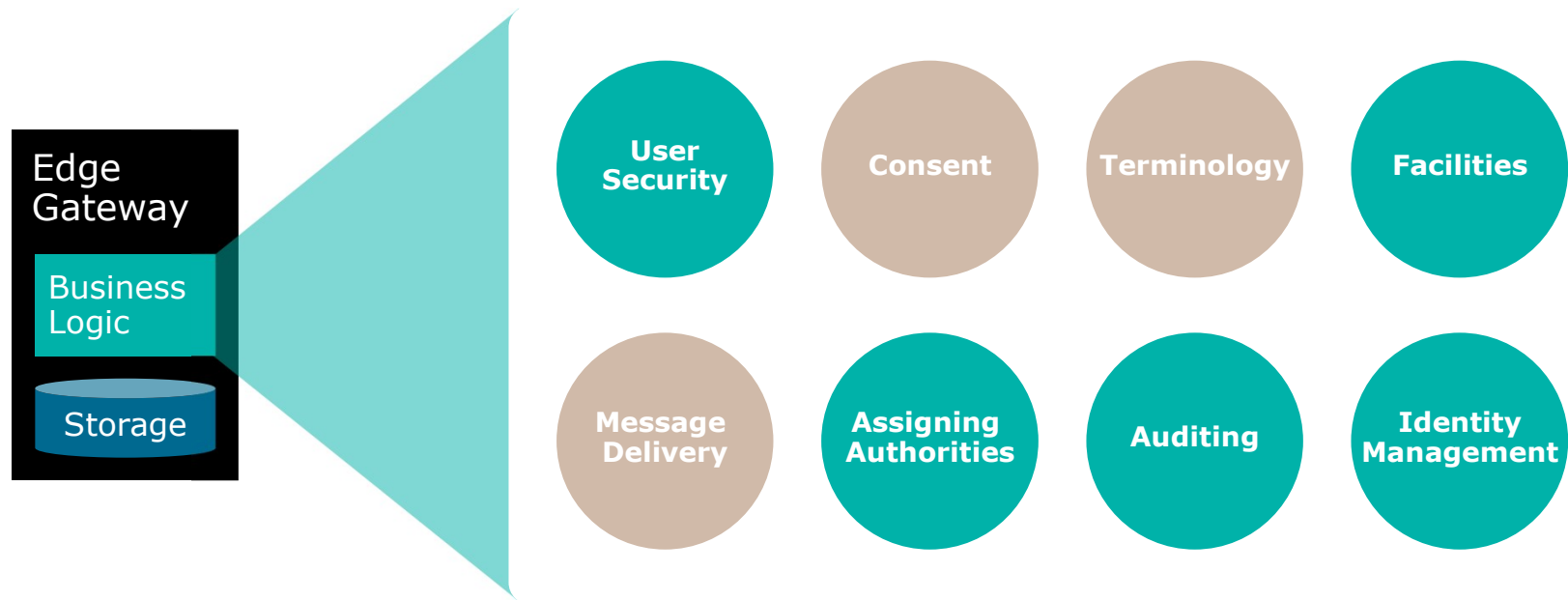
Configurable / Modular Platform Elements



Unified Care Record



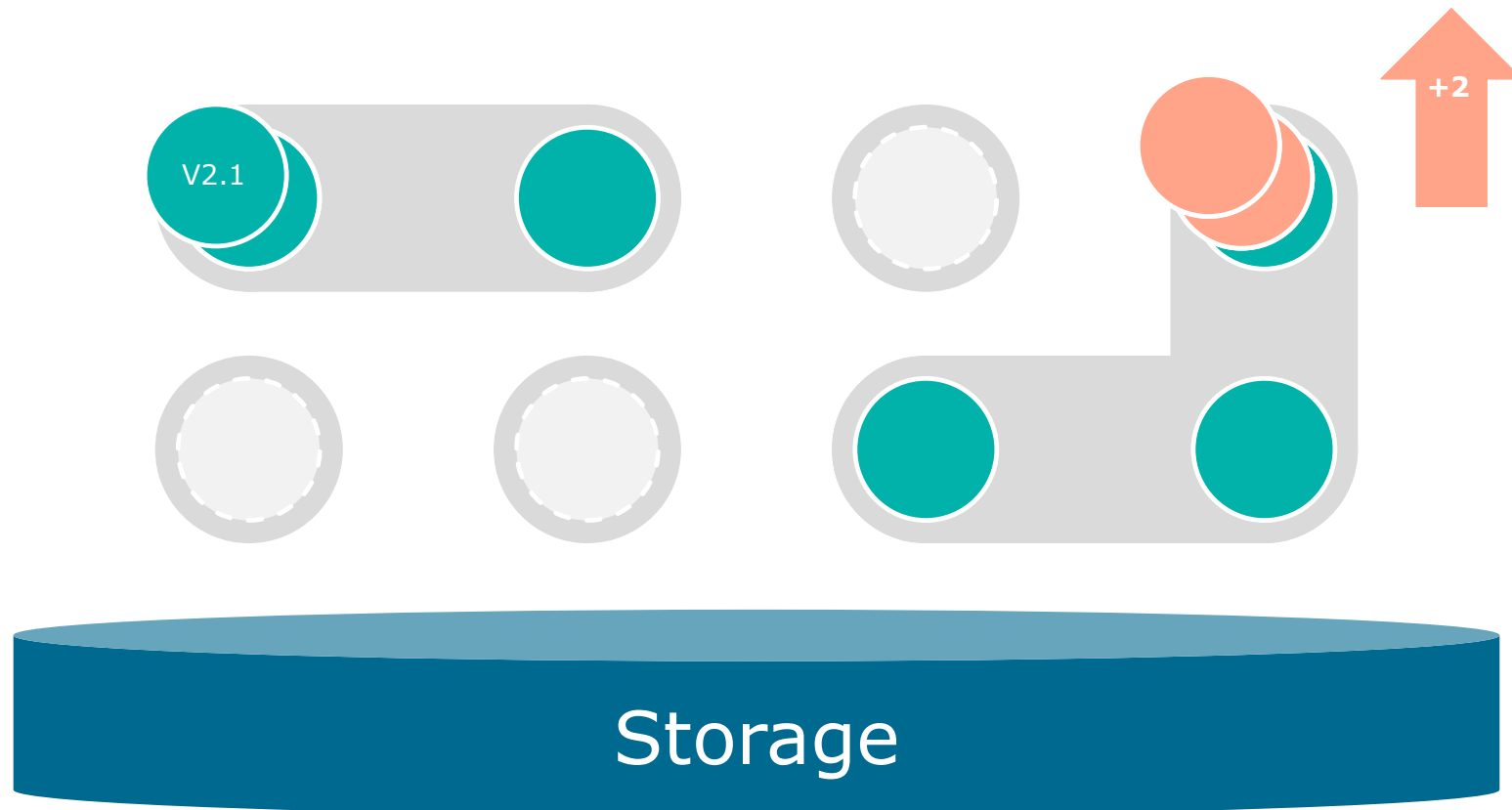
Configurable / Modular Platform Elements



Configurable / Modular Platform Elements



Configurable / Modular Platform Elements



InterSystems on HL7 FHIR®



- Mission: services for any source
- Data symmetry in SDA, Health Insight, FHIR
- Wide profile support
- FHIR data ingestion
- Bulk FHIR Data
- FHIR accelerator service
- HL7 to FHIR Message Transformation service
- FHIR input/output to clinical decision support



IRIS FHIR accelerator and HL7-to-FHIR service

PJAMIESO DEFAULT



PATRICK JAMIESON ▾

Deployments

Overview

Metrics

OAuth 2.0

Credentials

API Development

Access Logs

Data Management

Resources

Backup

Settings

Resource Center

Administration

API Development

Choose FHIR® Resource

Patient ▾

FHIR R4 Patient Resource

r4 OAS3

<https://68wxc790mdh6-swagger.s3.us-east-2.amazonaws.com/Patient.json>

Information about an individual or animal receiving health care services

Servers

<https://fhir.68wxc790mdh6.static-test-account.isccloud.io> ▾

Authorize



Patient ▾

POST /Patient



GET /Patient



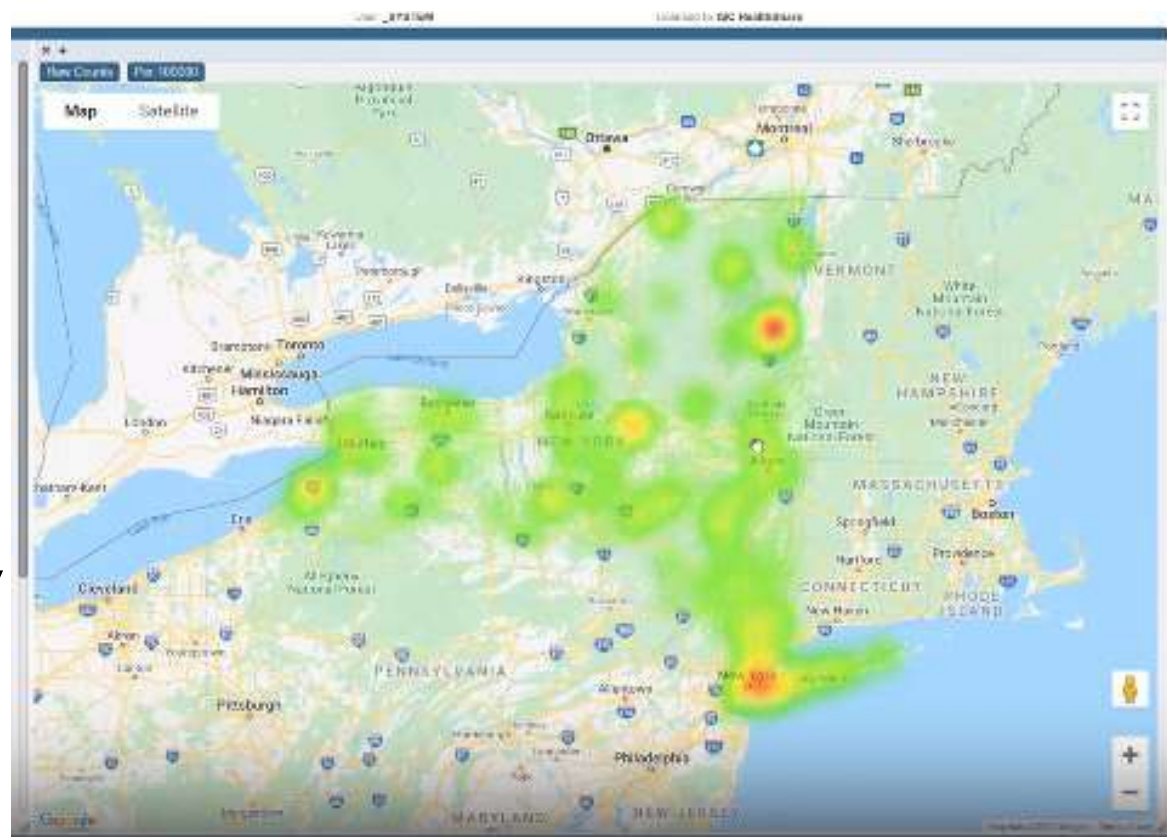
GET /Patient/{id}



Health Insight – data strength



- Population and organizational insight
- Big / wide data
- Rapid, low-latency data ingestion
- Top-class database, flexible front end
- Rapid interfacing, modeling, cube building
- Synergy with external DBs
- Support AI/ML, large registries, SDOH...



Data Strength

The most trusted source of aggregated, interoperable data



*Speed – Capacity – Reliability
– Manageability – Flexibility*

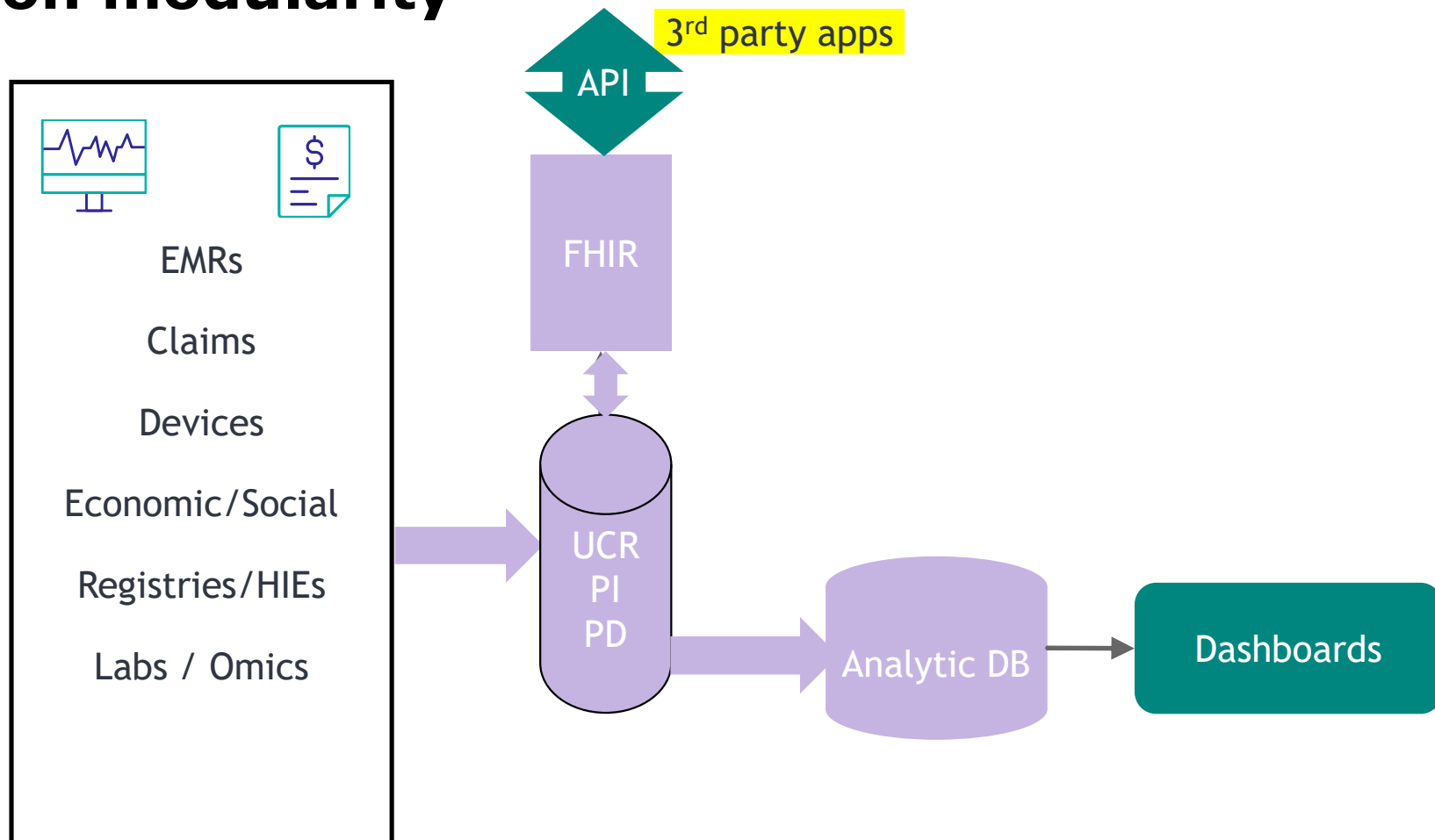
Healthcare Solutions

Superior added value on top of "just data"

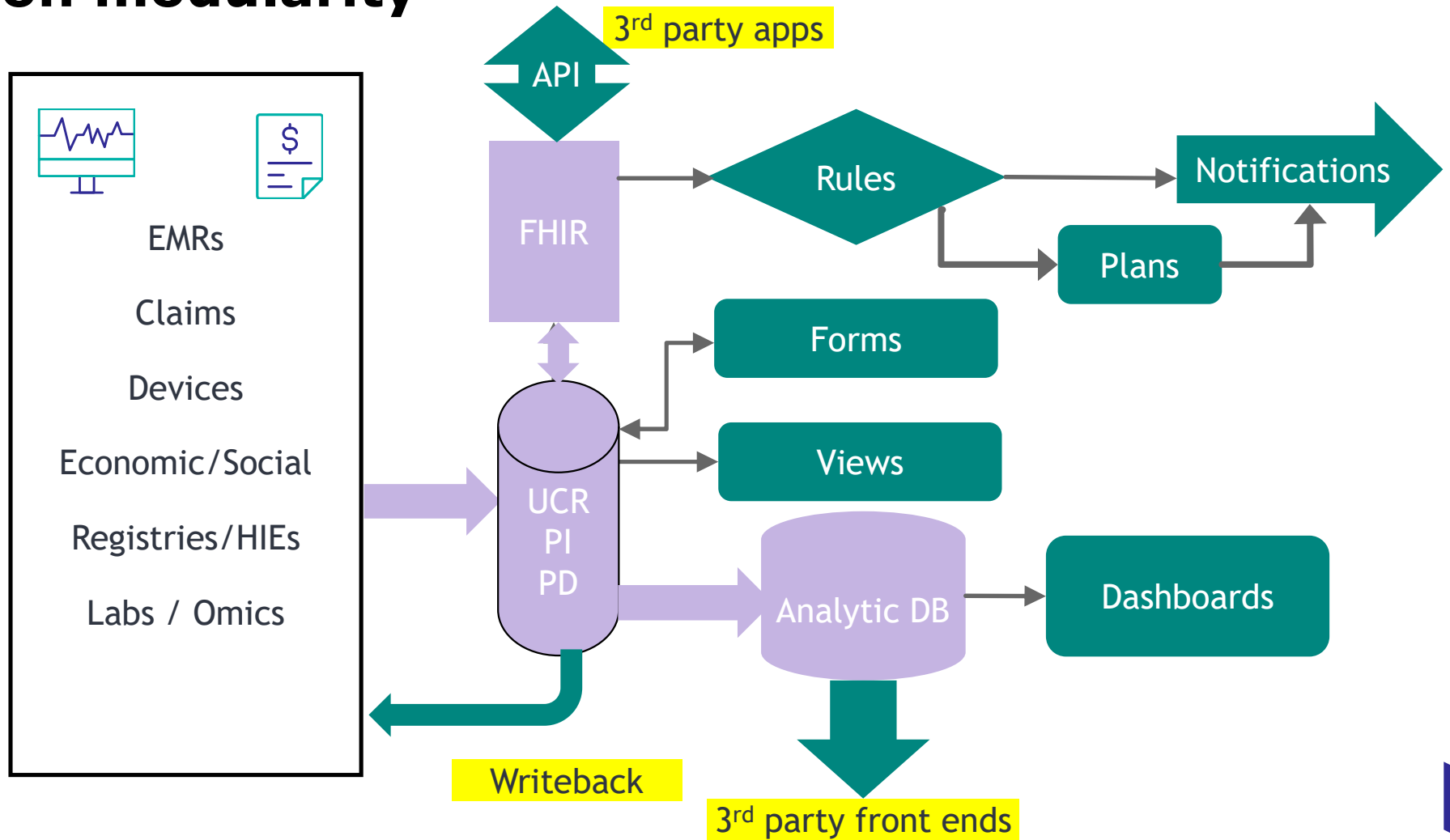


*Views – Summaries –
Coordination
Logic – Analysis – Notifications*

Solution modularity



Solution modularity



Clinical Viewer

- Expanding data types
- Data configurability
- Clinical & claims data combination
- Use-case filtered views
- Ongoing:
 - Performance enhancements
 - UX and graphing enhancements
 - User-designed reports
 - Grouping & filtering
 - Noncategorised data

The screenshot displays the 'Clinical Viewer' interface for a patient named SMITH, John (10/19/1930 - 89 Yrs - Male). The interface is organized into a sidebar on the left and a main content area on the right.

Sidebar (Left):

- Chartbook
 - Clinical Summary
 - Diagnoses (selected)
 - Allergies
 - Medications
 - Documents
 - Lab Results
 - Diagnostics
 - Conditions
 - Allergies
 - Medications
 - Documents
 - Immunizations
 - Vital Signs
 - Lab Results
 - Diagnostic Studies
 - Procedures
 - Histories

Main Content Area (Right):

- Diagnoses:** A table listing various conditions.

Diagnosis	Type	Date	Details
Asthma	DA	04/01/2020 12:02	
Dependence on other enabling machines	DA	04/01/2020 09:45	
Type 2 diabetes mellitus	T2D	12/02/2017 09:45	
Dementia in Alzheimer's disease	DA	12/02/2017 09:45	
Type 2 diabetes mellitus	T2D	12/02/2017 09:45	
- Allergies:** A table listing allergens and reactions.

Allergen	Reaction	Source	Category	Date
Chocolate	Sneeze		Food	
- Medications:** A table listing medications, doses, and dates.

Medication	Dose	Date	Details
Panadeine Forte Tablets	100	12/09/2017 12:12	
Amoxil Oral Capsules	500 mg	12/02/2017 09:45	
- Lab Results:** A table listing lab orders, results, and dates.

Order	Result	Date	Details
CBC+ AUTOMATED DIFFERENTIAL	Result	04/01/2020 08:00	
CBC+ AUTOMATED DIFFERENTIAL	Result	12/10/2017 19:00	
CBC+ AUTOMATED DIFFERENTIAL	Result	12/09/2017 19:00	
SURGICAL SWAB	Result	12/09/2017 19:00	
CBC+ AUTOMATED DIFFERENTIAL	Result	11/20/2017 10:49	
- Diagnostics:** A table listing studies and dates.

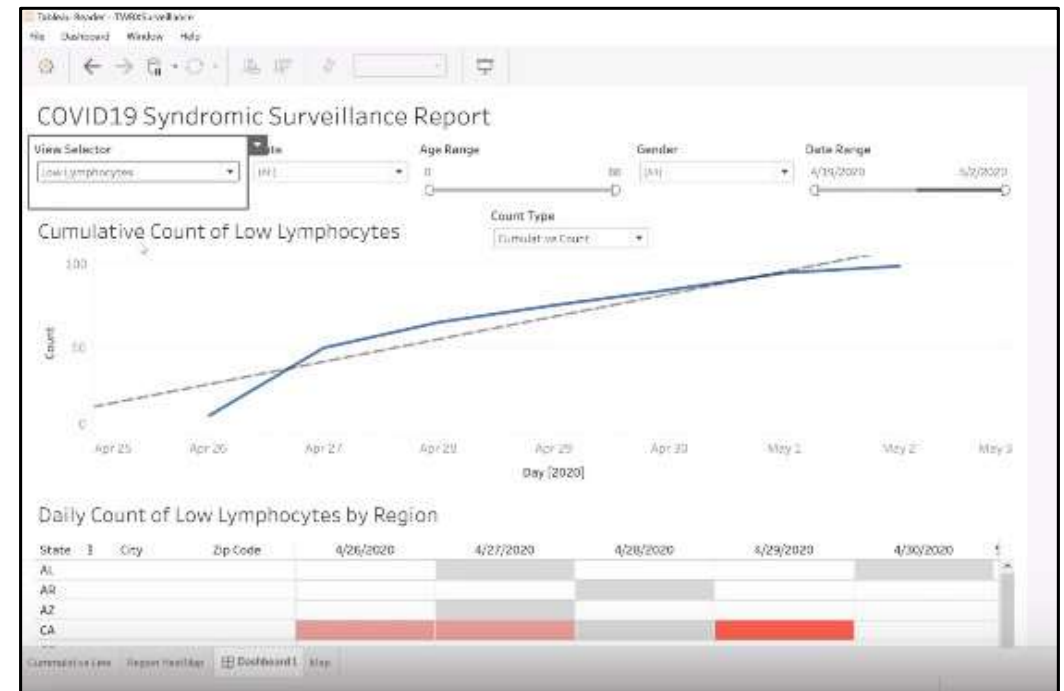
Study	Date	Details
Angiography		
- Documents:** A table listing documents and dates.

Document	Date	Details
Admitted with unstable sugar l...	12/09/2017 13:00	
Patient complaining of pain in...	12/02/2017 09:45	
Patient seems vague complainin...	11/23/2017 09:07	

Analytics / Population level: example of Covid-19



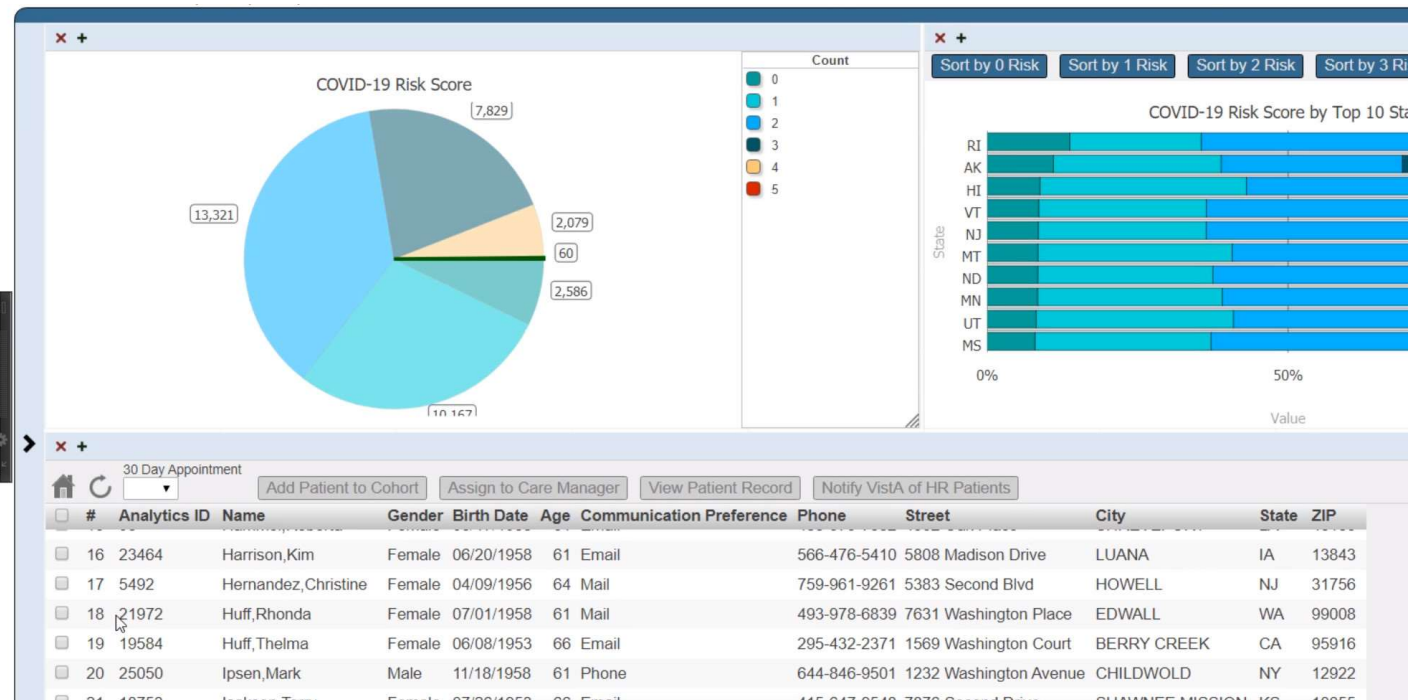
- Track epidemic progress across a region
- Public and national common reporting
- Track and redeploy resources
- Predict associations (causes/treatments), severity
- Syndromic surveillance – trends / anomalies



Health Insight Solutions



- Set of solution builder templates and tools
- Configured value sets, query content, dashboards, reports, cohort building
- Use cases: Gaps in care, utilisation, CQMs, Covid, surveillance, missed coding opportunities, pop health, chronic condition optimisation, adequacy of resources in a region



Care Community: care coordination and plans



SMITH, John
10/19/1930 - 88 Yrs - Male

Chartbook

- Care Plans
- > Clinical Summary
- > Conditions
- Allergies
- > Medications
- Documents
- Immunizations

Care Plans: Forms

Form Name	Created On	Created By	Last Modified On ↓	Last Modified By	Version	Status	Actions
Falls Risk Assessment	April 24, 2019 10:00 AM	Sam Mill	April 24, 2019 10:01 AM	Sam Mill	1	Locked by Sam Mill	...
Falls Risk Assessment	April 24, 2019 9:56 AM	Sam Mill	April 24, 2019 10:00 AM	Emma Wood	2	Final	...
Discharge Evaluation	April 24, 2019 9:03 AM	Sam Mill	April 24, 2019 9:12 AM	Sam Mill	2	Active	...

View
Edit
Publish PDF

+ New

- Multi-person, -step, -venue team can stay in sync
- Teams, tasks/plans, forms, messaging
- Use cases: referrals, transitions, chronic conditions, social care
- Patient engagement in plans
- Pop health = analytics + cohorting + care planning

Open Tasks for Functional Status Care Plan

+ Add Task

Task Name	Assigned To	Due On	Status	Actions
Refer patient to ENT for audiometry evaluation	Dolores Vera	02-Apr-2021	Not Started	...



Recommended Summary Plan for Emergency Care and Treatment

The ReSPECT process starts with a conversation between a person and a healthcare professional. The ReSPECT form is a clinical record of agreed recommendations. It is not a legally binding document.

1. This plan belongs to:

Full name	Hereford, James
Date of birth (dd/mm/yyyy)	27/01/1965
Address	1 County Lane Worcester WR1 1AT
NHS/CHI/Health and care number	4507243333
Preferred name	
Date completed (dd/mm/yyyy)	

2: Shared understanding of my health and current condition

Summary of relevant information for this plan including diagnoses and relevant personal circumstances:

Cancer of the pancreas with spread to the liver. Initial chemotherapy not effective; does not want more. No communication difficulties.

Lives with and is the main carer for her blind husband (he is known to local social services).

Details of other relevant care planning documents and where to find them (e.g. Advance or Anticipatory Care Plan; Advance Decision to Refuse Treatment or Advance Directive; Emergency plan for the carer):

Referred to palliative care for further discussions.

I have a legal welfare proxy in place (e.g. registered welfare attorney, person with parental responsibility)
- if yes provide details in Section 8

☐ Yes / ☒ No

3: What matters to me in decisions about my treatment and care in an emergency

Provider Directory



- HSPD as source of truth
- FHIR Da Vinci Plan-Net support
- Use cases:
 - Physician attribution
 - Notification recipients
 - Network/plan mgmt.
 - Referral search
 - No Surprises Act support
 - Cross-entity KPIs
 - Cross-entity care teams
- Ongoing: enhanced search, region and role fine control
- Patient Index – referential, more matching enhancements

Provider Directory

Task List

Master Browser

Administration

⚙ About

🔍 Help

🚪 Logout

👤

JOHNSON, FREDERICK

NPI: 2099999442

EID: 100000780

Overview

Contributing Records

History

Master

Brought into the System

September 14, 2020 7:16 AM

Last Updated

September 17, 2020 4:38 PM

Enterprise ID

100000780

Source ID

Name

DR FREDERICK K JOHNSON JR

Default Tax ID

Identifier: 52-3456789
Type: Employer Identification Number

NPI

NPI (Identifier): 2099999442

Source: EASTCARE

Brought into the System

September 17, 2020 4:38 PM

Began Contributing

September 17, 2020 4:38 PM

Last Updated

September 17, 2020 4:38 PM

🔗 Manage Links

100000780

2099999442

DR FREDERICK K JOHNSON JR

Identifier: 52-3456789
Type: Employer Identification Number

Source: ECHO

Brought into the System

September 17, 2020 4:37 PM

Began Contributing

September 17, 2020 4:37 PM

Last Updated

September 17, 2020 4:37 PM

🔗 Manage Links

100000780

2099999442

DR FRED K JOHNSON JR

Identifier: 52-3456789
Type: Employer Identification Number

NPI (Identifier): 2099999442

Source: WESTMED

Brought into the System

September 17, 2020 4:02 PM

Began Contributing

September 17, 2020 4:02 PM

Last Updated

September 17, 2020 4:02 PM

🔗 Manage Links

100000780

2099999442

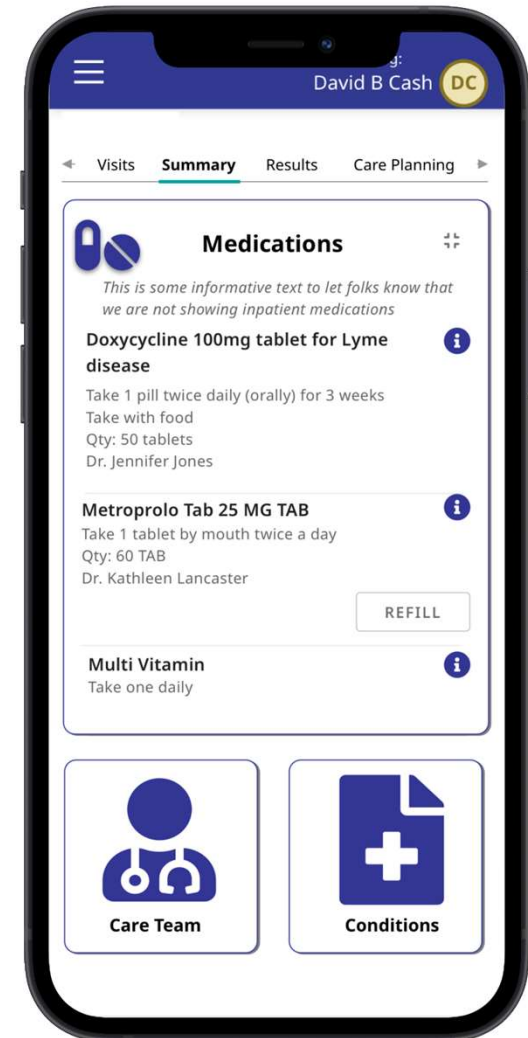
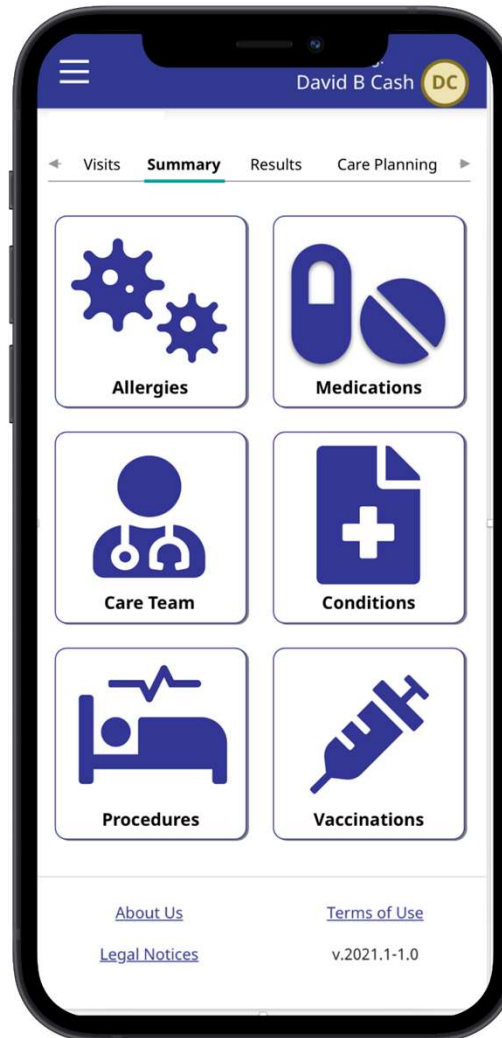
DR FREDERICK JOHNSON

Identifier: 52-3456789
Type: Employer Identification Number

NPI (Identifier): 2099999442

Personal Community

- Patient records access across the network, with overall and specific views
- Combined data for multi-EMR IDNs
- Host 3rd party SMART apps
- Control for CMS patient access API
- Control for prior auth requests
- Payer health programs
- Common forms structure – for patient participation in care plans
- Major UX update

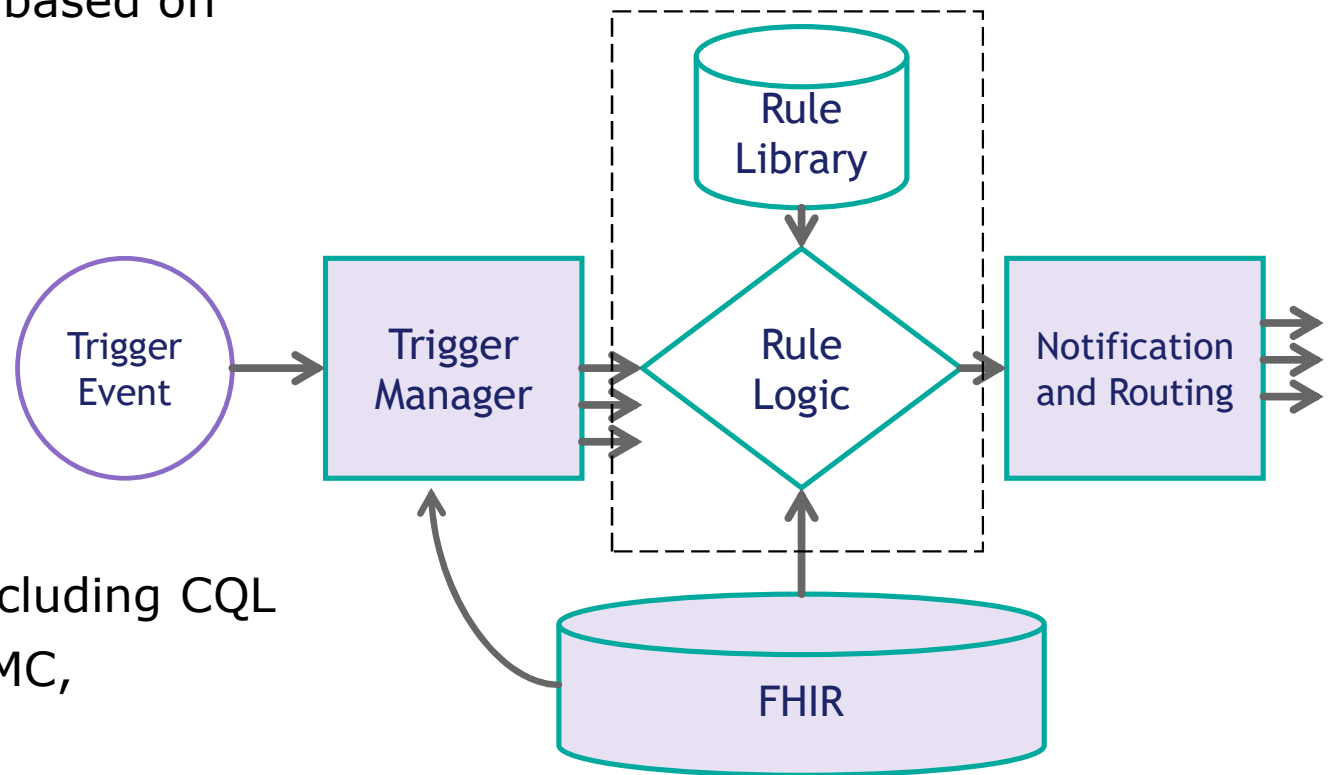


Intelligent Notifications / Healthcare Action Engine



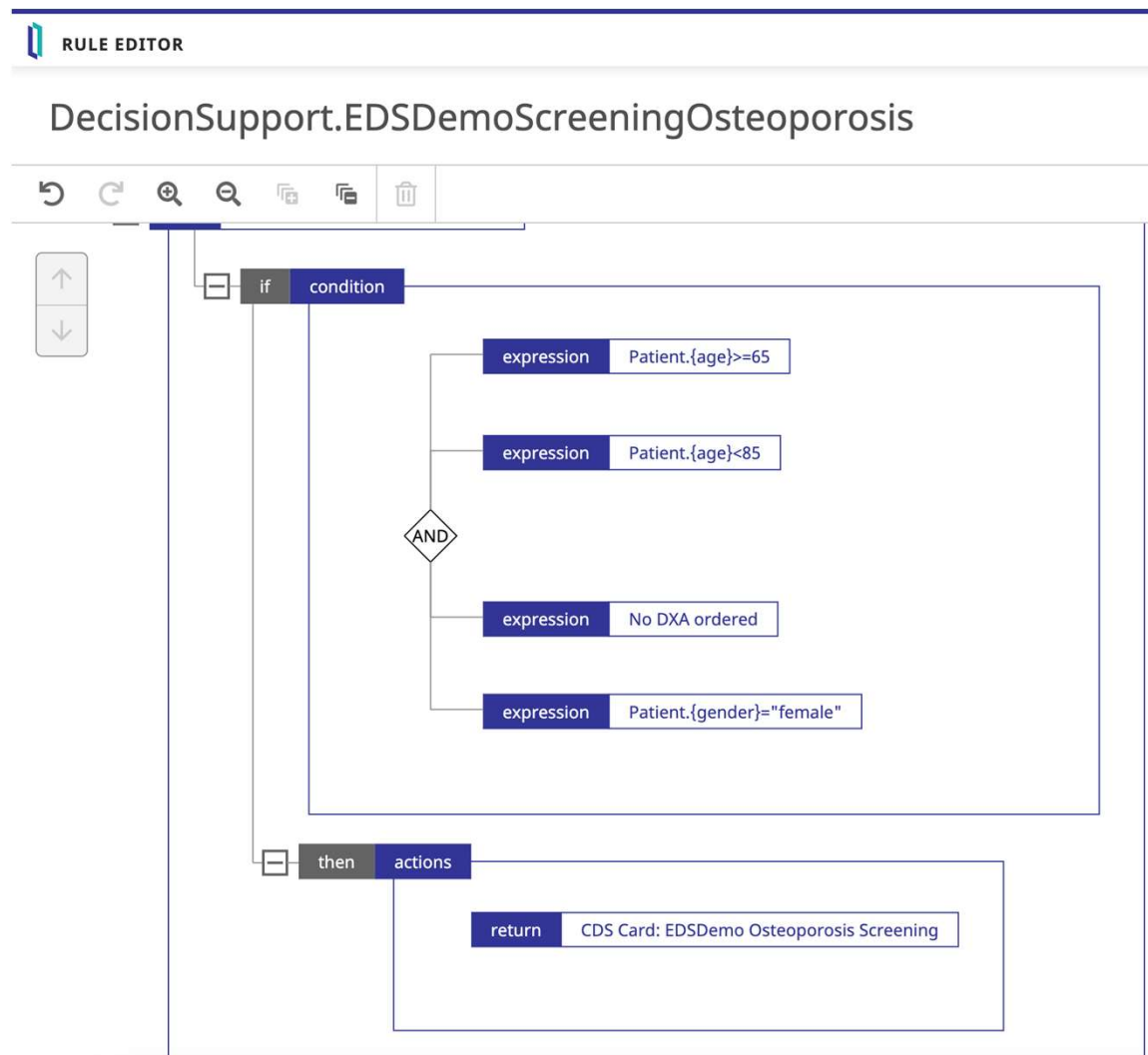
- Alerts, reminders, guidance based on multi-site data
- No-code rule building
- Uses UCR data or any FHIR
- CDS Hooks interface
- Triggered or requested

- Support for external logic including CQL
- Actions: Message, Direct, CMC, pipe to EHR, feed analytics



No-code rule builder

(Healthcare Action Engine)



Healthcare Rule Editor



RULE EDITOR

DecisionSupport EDS Demo CMS125 v7

Rule Set #1

assign @not

rule EDS

↑

↓

←

→

🔍

🔍

HSEDS1

Save

Compile

Create an Expression

×

2 Select the FHIR resource type and search parameters

There exists There does NOT exist

FHIR Resource	FHIR Resource > Condition
AllergyIntolerance	abatement-age
Condition	abatement-date
Encounter	clinical-status
Immunization	code
MedicationAdministration	onset-age
MedicationRequest	onset-date
MedicationStatement	severity
Observation	
Procedure	

Show More Show More

←

CODE (Parameter Type: token)

Modifier

You must enter either System or Code.

System Type

Specific code system

System

http://hl7.org/fhir/sid/icd-1

Code(s)

.2,I50.20,I50.21,I50.22,I50.23

You must enter either System or Code.

System Type

Specific code system

System

http://snomed.info/sct

Code(s)

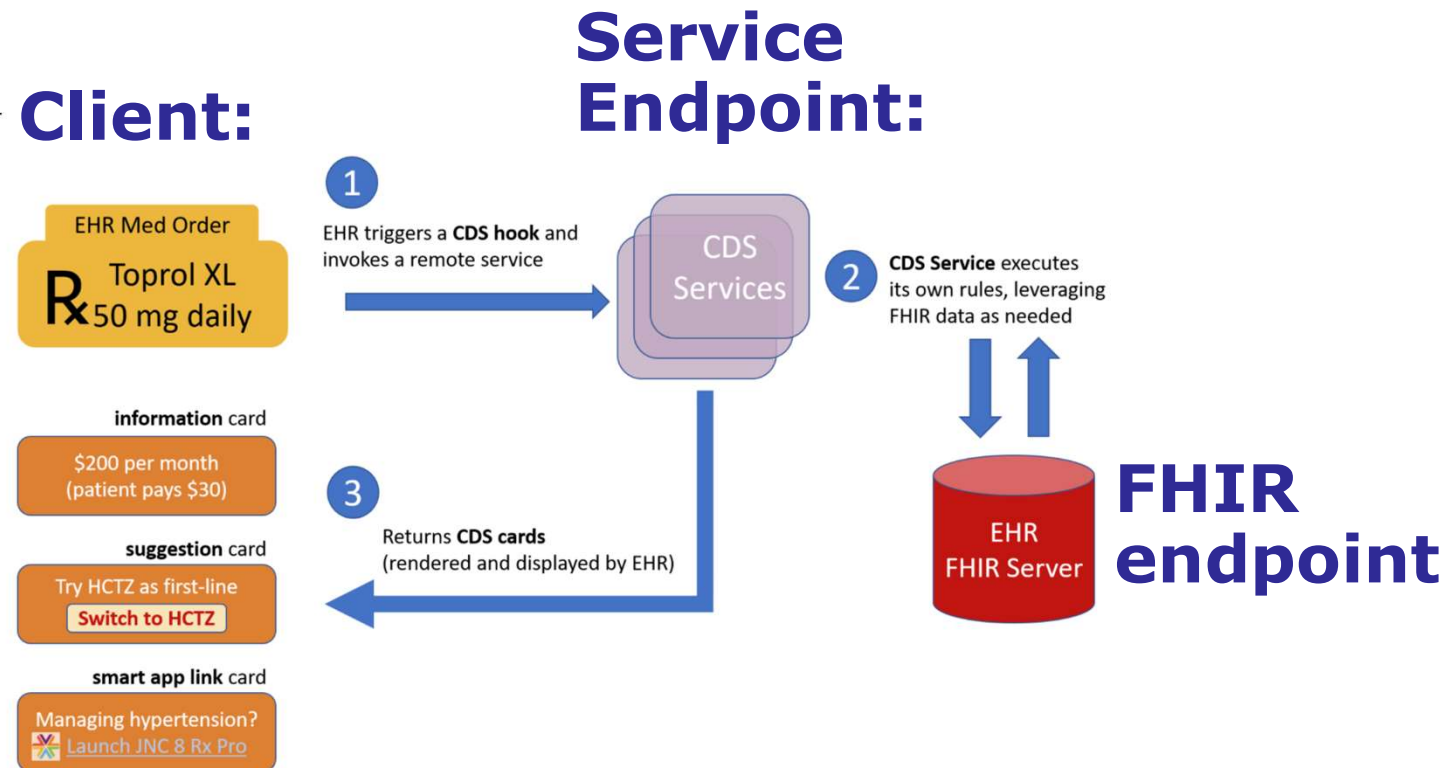
417996009,441481004

Show query string preview

✓

Cancel

CDS Hooks framework for synchronous alerts



Use cases: population analysis / individual intervention



- Burn pit exposure health status
- Patients seen outside of the VA
- Covid long-term follow-up
- Gaps in care / CQMs
- Stats and interventions for diabetes, heart failure, etc.
- Regional resource/disease balance
- Syndromic surveillance
- ED frequent users
- Patient access to data
- Care plan / pathway monitoring
- Referral patient collaboration
- Data for AI/ML
- Prior auth

Time to value / cost of HealthShare



- Storage
- Auditing
- New feeds
- Data feed analysis
- Rapid onboard of all data
- Heading off problems

- **Stream compression** →

- Stream global-level compression
- Various HS components
- Available in HS 2021.2

80-90% compression of streams

*Eg. 1TB of streams in gp2 = \$100/mo
vs 150GB gp2 = \$15/mo*

- **Database Compression** →

- Database disk-level compression
- Allows for tiered storage (EBS block st1/sc1)
- Specific use cases (audit data)
- Available in HS 2021.2

80-90% compression of audit data
Leverage lower-cost storage tiers

*Eg. 30TB of audit in gp2 = \$3000/mo
vs 5TB st1 = \$225/mo or sc1 = \$75/mo*

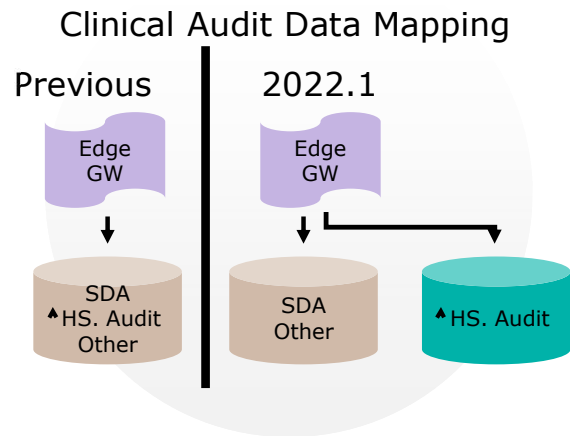
- **Journal Compression & Archive** →

- Journal disk-level compression
- Allows for tiered storage (EBS block st1/sc1 and object s3)
- Impacts all HS instances
- Available in HS 2022.x

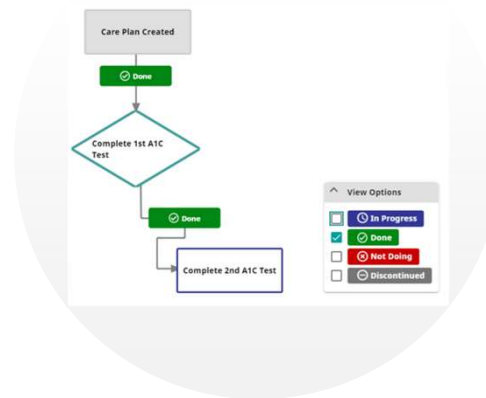
80-90% compression of journals
Leverage lower-cost storage tiers

*Eg. 1TB of journal in gp2 = \$100/mo
vs 10GB gp3 + 140GB st1 = \$7.10/mo*

Other InterSystems Healthcare highlights



Audit / Storage
Reduction



Care Coordination:
Sequenced Plans, Task
Management



Clinical Viewer – Data
Extensions, Enhanced
Graphing and Control

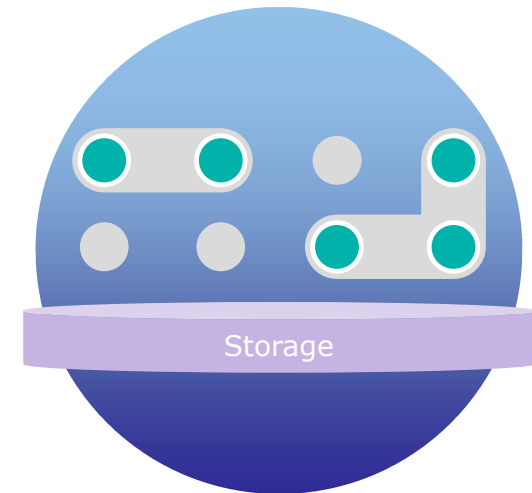
Other InterSystems Healthcare Highlights



Provider Directory –
Finer Forms and
Regional Control

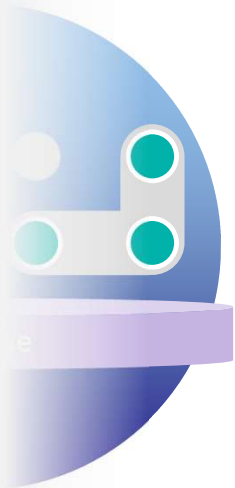


FHIR Edge For Payer-
to-Payer

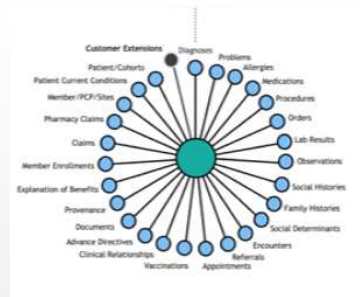


Package
Manager

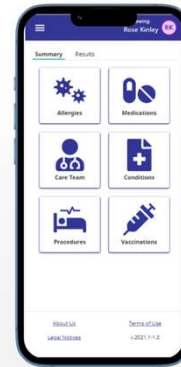
Other InterSystems Healthcare Highlights



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Data Extensions



Personal Community
New UX

Custom apps



FHIR Apps

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Care Planning and Coordination



Patient Engagement

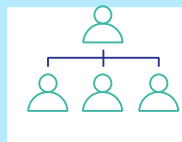


Health Connect



Unified Care Record

Provider Directory



Patient Index



Clinical Visualisation



Advanced Rules and Notifications



Data Access and Exchange (CMS)



Analytics



Thank you