HIMSS Michigan Chapter
“Fix the DAMN Roads”

3 October 2019

Robert Dieterle, Da Vinci Program Management Office
CEO, EnableCare LLC
Not just Data Integration but must include Workflow Integration
EMR Adoption…

### Hospitals

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>60%</td>
<td>96%</td>
</tr>
</tbody>
</table>

### Physician Practices

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>42%</td>
<td>87%</td>
</tr>
</tbody>
</table>

https://dashboard.healthit.gov/quickstats/quickstats.php
APIs...

- An API is a software intermediary which allows applications to talk to each other
- APIs allow the capabilities or data of one computer program to be used by another
  - Lego blocks of data
  - Doesn’t matter what the underlying computer or technology is
- APIs are a foundational technology that drives modern computing and the API economy (Amazon, Netflix, Google, Facebook, EBay, YouTube, Twitter, & etc.)
- APIs enable innovation in an unprecedented manner
- APIs are not new… simplified, easy to use versions of them are

YOUR APP

REQUEST

THEIR APP

API

DATA

DEVELOPERS

will access your assets through your API to build Mobile Apps and Web Apps based on the data and software you share.

THE API

provides universal access to whatever assets you choose to share. Developers can "plug in" their apps and data.

ASSETS

Your data and software (and brand) become more valuable by being leveraged by partners, developers, and third-party services.

END USERS

have access to apps that provide richer experiences by leveraging the data and services of other apps.
**What is FHIR?**

**FHIR® — Fast Healthcare Interoperability Resources**
- An HL7 next generation standard
- Helps two computer systems talk to each other

**FHIR "resources" are standardized & reusable**
- Patient, practitioner, organization, deviceRequest

**FHIR supports common exchange methods**
- REST*, messaging, documents and services

**FHIR supports the spectrum of integration**
- Mobile phone apps, EHR-based data sharing, institutional solutions

**FHIR helps with existing use cases & provides for future innovation**

*Representational State Transfer (REST) defines a set of constraints used for creating web services*
Supporting Technologies

Healthcare specific Profile
- OpenID (identity)
- OAuth2 (authorization)
- Patient Context

Practice Management EMRs
Partial List
- Epic
- athenahealth
- Cerner
- Allscripts

Supporting Technologies

HL7 V3
CDA

CDS HOOKS

CARDS
- Information
- Suggestion

SMART

Suggestion

Information
Standards Efforts Towards FHIR Adoption

**FUNCTIONAL USE CASES**

**SHARED Technical Challenges to FHIR Scalability**

1. Security (Authentication, Authorization)
2. Patient & Provider Identity Management
3. Directory Services
4. Version Identification
5. Scale
6. Exchange Process/Metadata
7. Testing, Conformance & Certification

**RAPID INDUSTRY ADOPTION**

**INFRASTRUCTURE USE CASES**

**Other Collaborative Efforts to Develop & Implement FHIR Solutions**

**FHIR Solutions for VBC**

- **DA VINCI**
  - FHIR at Scale Taskforce
- **ARGONAUT PROJECT**
  - HL7 FHIR
- **Payers/Providers/Members**

**Core Data Services**

- **Consumers**

- **Provider/Provider**

**FHIR Consumer Solutions**

- **carin**

- **Shins**

- **Technical Challenges**
  - Scalability
  - Functionality
  - Use Cases

Common Scalability Approaches
HL7 Da Vinci Project: An Overview

To ensure the success of the industry’s **shift to Value Based Care**, Da Vinci established a **rapid multi-stakeholder** process to identify, exercise and implement initial use cases between payers and provider organizations.

The objective is to **minimize** the development and deployment of **unique solutions** with focus on reference architectures that will promote adoption of industry wide standards.

**Providers (11)**

ATI Physical Therapy, Cedar-Sinai, MultiCare, Connected Care, OHSU, Rush Medical, Providence St. Joseph Health, Sutter Health, Texas Health Resources, Weill Cornell Medicine

**Payers (14)**

Anthem, Blue Cross Blue Shield Alabama, Blue Cross Blue Shield Association, BCBS Tennessee, Blue Cross Blue Shield of Michigan, Blue Cross of Idaho, Cigna, Cambia Health Solutions, Centers for Medicare and Medicaid Services, GuideWell, Health Care Service Corporation, Humana, Independence Blue Cross, UnitedHealthcare

**Technology Suppliers (15)**

Allscripts, Cerner, Casenet, Cognosante, Edifecs, Epic, Healow Insights, HealthLX, Infor, InterSystems, Juxly, Optum, Surescripts, Virence Health, ZeOmega

**Partners (2)**

HIMSS, NCQA
Use Case Focus Areas

Quality Improvement
- Data Exchange for Quality Measures
- Gaps in Care & Information

Coverage / Burden Reduction
- Coverage Requirements Discovery
- Documentation Templates and Rules
- Prior-Authorization Support

Process Improvement
- Clinical Data Exchange
- Payer Data Exchange
- Payer Data Exchange: Formulary
- Payer Data Exchange: Directory
- Payer Coverage Decision Exchange
- Patient Cost Transparency
- Risk Based Contract Member Identification
- Chronic Illness Documentation for Risk Adjustment

Member Access
- Alerts / Notifications
- Patient Data Exchange
- Performing Laboratory Reporting

Use Case Status
- May ballot STU and for comment
- In early September ballot (July) as STU
- September ballot as STU
- Currently targeted for early or regular January 2020 ballot
- Use cases in discovery (some may be balloted in January 2020)
Information Exchanges Supported by Da Vinci IGs

[10] Provider Data
[12] Alerts/Notifications

[1] Quality Data
[10] Provider Data

[12] Alerts/Notifications

[3] USCDI
[6] Continuity of Treatment

[2] Gaps in Care
[7] Coverage Requirements
[8] Documentation Rules

[2] Aggregated Quality Measure Reporting

Quality Measures and Gaps
[1] Data Exchange for Quality Measures
[2] Gaps in Care and Information

Member Directed Exchange (CMS NPRM)
[3] Payer Data Exchange
[6] Payer Coverage Decisions (Treatment)

Coverage/Documentation Requirements
[7] Coverage Requirements Discovery
[8] Documentation Templates and Rule

Patient Data Exchange
[10] Clinical Data Exchange (Provider Data)
[11] Payer Data Exchange (Payer Data)
[12] Alerts/Notification

Patient Cost Transparency (in discovery)
CMS NPRM and Da Vinci Solutions
# Work Breakdown to Support CMS NPRM

## Work Breakdown to Support CMS NPRM

<table>
<thead>
<tr>
<th>DATA</th>
<th>SUB TYPE</th>
<th>RESOURCE / PROFILE</th>
<th>BUILD</th>
<th>MEMBER</th>
<th>PROVIDER</th>
<th>PAYER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claims Data</td>
<td>Financial</td>
<td>EOB</td>
<td>CARIN</td>
<td>CARIN</td>
<td>Da Vinci</td>
<td>Da Vinci</td>
</tr>
<tr>
<td></td>
<td>Clinical</td>
<td>USCDI / US Core / Da Vinci</td>
<td>Da Vinci</td>
<td>DV for CARIN</td>
<td>Da Vinci</td>
<td>Da Vinci</td>
</tr>
<tr>
<td>Clinical Data</td>
<td>All</td>
<td>USCDI / US Core / Da Vinci</td>
<td>Da Vinci</td>
<td>DV for CARIN</td>
<td>Da Vinci</td>
<td>Da Vinci</td>
</tr>
<tr>
<td>Payer Decisions</td>
<td>Treatment</td>
<td>USCDI / US Core / Da Vinci</td>
<td>Da Vinci</td>
<td></td>
<td>Da Vinci</td>
<td></td>
</tr>
<tr>
<td>Pharma Data</td>
<td>RTBC</td>
<td>RTBP / FHIR R4</td>
<td>CARIN NCPDP</td>
<td>Da Vinci</td>
<td>DV for CARIN</td>
<td>Da Vinci</td>
</tr>
<tr>
<td></td>
<td>Medications</td>
<td>USCDI / US Core</td>
<td>Da Vinci</td>
<td></td>
<td>Da Vinci</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Formulary</td>
<td>Da Vinci (new Profile)</td>
<td>Da Vinci</td>
<td></td>
<td>Da Vinci</td>
<td></td>
</tr>
<tr>
<td>Directory Data</td>
<td>Payer &amp; Pharma Network</td>
<td>US Core / VHDS / Da Vinci</td>
<td>Da Vinci</td>
<td>DV for CARIN</td>
<td>Da Vinci</td>
<td></td>
</tr>
</tbody>
</table>
CMS NPRM Requirements for Covered Payers

Blue Button 2.0 -- CARIN
USCDI -- Da Vinci PDex
Directory -- Da Vinci Payer Network
Formulary -- Da Vinci Formulary
Coverage -- Da Vinci PCD
Goal: To address the portability of care/treatment as a member moves from one covered plan to another

Regulatory: CMS NPRM for member directed payer to payer exchange of USCDI data

Immediate Requirement: Support for information regarding ongoing treatment
   a) Relevant diagnoses
   b) Current treatments (including start date, end date (if any), …)
   c) Guidelines for prior-authorization (e.g. specific Milliman guideline)
   d) **Current prior-authorizations (service, duration, remaining)**
   e) Clinical information that went into the decision for treatment coverage
CMS NPRM Requirements for Condition of Participation Hospitals and Specialty Providers

Site of where notifiable event occurred

HIE / HIN

Primary Care

Specialty Care

Inpatient Services

Payer

Potential Interactions:
1) Subscribe to event directly (no intermediary)
2) Subscribe to event via intermediary
3) Push to “registered” member (perhaps via payer care team information)
4) Push to intermediary

Da Vinci FHIR Alerts/Notifications

Any care team member can be connected directly or via an intermediary (e.g. HIE)
Prior Authorization Support
Currently providers and payer exchange prior authorization requests and supporting medical records using a number of methods: telephone, fax, portals, and electronic transactions.
Current HIPAA / Anticipated Attachment Approach

Must be ASC X12N 278 (PA request) / 275 (attachment with CDA)
May be any method (including ASC X12N)

Per the reqs (i.e. §162.923 Requirements for covered entities), if the Clearinghouse services both payer and provider, they must act as two virtual clearinghouses and must provide the transaction as a HIPAA compliant standard transaction internally – not currently enforced by CMS
Future FHIR Enabled Solution

- Must be ASC X12N 278 (PA request) / 275 (attachment with CDA)
- May be any method (including ASC X12N)
- HL7 FHIR

[Diagram showing interactions between FHIR, ASC X12N, and Clearing Houses, with options for Payer 1 and Payer 2]
Use Case Focus Areas

Quality Improvement
- Data Exchange for Quality Measures
- Gaps in Care & Information

Coverage
- Coverage Requirements
- Discovery
- Documentation Templates and Rules
- Prior-Authorization Support

Process Improvement
- Clinical Data Exchange
- Payer Data Exchange
- Payer Data Exchange: Formulary
- Payer Data Exchange: Directory
- Payer Coverage Decision Exchange
- Patient Cost Transparency
- Risk Based Contract Member Identification
- Chronic Illness Documentation for Risk Adjustment

Member Access
- Use Case Status
  - May ballot STU and for comment
  - In early September ballot (July) as STU
  - September ballot as STU
  - Currently targeted for early or regular January 2020 ballot
  - Use cases in discovery (some may be balloted in January 2020)

Clinical Data Exchange
- Alerts / Notifications
- Patient Data Exchange
- Performing Laboratory Reporting
- Payer Data Exchange
- Clinical Data Exchange
- Payer Data Exchange
Power to Reduce, Inform and Delegate Prior Authorization Support

- Coverage Requirements Discovery
- Documentation Templates and Coverage Rules
- Prior Authorization Support

CDS Hooks
- FHIR APIs
- X12 278
- X12 275 (if required)

Transform Layer
- PAYER
- EHR/PROVIDER BACK OFFICE SYSTEMS

Improve transparency
Reduce effort for prior authorization
Leverage available clinical content and increase automation
By using new technologies (HL7© FHIR©, CDS Hooks™, SMART on FHIR©, CQL©) it is possible to integrate time intensive tasks into the clinical workflow to achieve significant efficiencies. We can substantially reduce provider burden by:

1. Acquiring critical patient information while the patient is available
2. Obtain prior authorizations in real-time for certain common services
3. Minimize rework by “getting it right the first time”

The most critical impact of improving the prior-authorization workflow is the improvement on patient care and experience.
### FHIR Prior Authorization Endpoint Interactions

**Prior Authorization Workflow Blackbox** (any valid combination of application, BA, clearinghouse and health plan)

1. **Receive and process PA bundle**
   - Respond in <15 seconds

2. **Receive and process Subscription request for “PENDED” PA**
   - Reply on change in PA status

3. **Receive and reply to PA status query**

4. **Receive and process cancel**

5. **Receive and process update**

6. **Support Status, Cancel, Update from both ordering and performing provider**

---

<table>
<thead>
<tr>
<th>Provider System</th>
<th>Prior-Authorization Black Box (any valid combination of application, BA, clearinghouse and health plan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Assemble information for PA request</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle including Information for 278/275</td>
</tr>
<tr>
<td>(2)</td>
<td>Receive and process Bundle</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle</td>
</tr>
<tr>
<td>(3)</td>
<td>Manage any HIPAA transaction requirements</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle including Information for 278/275</td>
</tr>
<tr>
<td>(4)</td>
<td>Process PA request and associated documentation and return result</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle</td>
</tr>
<tr>
<td>(5)</td>
<td>Present result of PA response to provider in workflow</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle</td>
</tr>
<tr>
<td>(6)</td>
<td>Receive status change notification</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle</td>
</tr>
<tr>
<td>(7)</td>
<td>Request Status (if PEND, or any reason)</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle</td>
</tr>
<tr>
<td>(8)</td>
<td>Receive and process request</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle</td>
</tr>
<tr>
<td>(9)</td>
<td>Present result of PA response to provider in workflow</td>
</tr>
<tr>
<td></td>
<td>FHIR bundle</td>
</tr>
<tr>
<td>(10)</td>
<td>Request cancel and/or update</td>
</tr>
<tr>
<td></td>
<td>Follows same path as original request and with original PA ID</td>
</tr>
</tbody>
</table>

---

**FHIR PA endpoint requirements**

1. **Receive and process PA bundle**
   - Respond in <15 seconds

2. **Receive and process Subscription request for “PENDED” PA**
   - Reply on change in PA status

3. **Receive and reply to PA status query**

4. **Receive and process cancel**

5. **Receive and process update**

6. **Support Status, Cancel, Update from both ordering and performing provider**
FHIR Prior Authorization Components

**Coverage Requirements**
1) Initiates process using CDS hooks
2) As if PA is required

**Templates and Rules**
1) If PA is required start SMART app and retrieve Payer Rules and Template
2) Prepopulate
3) Solicit missing info

**PA Support**
1) Package clinical data and request/response
2) Manage exchanges with payer

---

**Diagram Description**

- **Provider**
  - (1) Provider orders or plans treatment
  - (5) Provider receives answer
  - (7) Gathers all information for PA and attachment and sends it directly or via intermediary to payer -- returns PAN, Pend, Deny
  - (6) EHR/SMART App collects attestations, clinical data (from patient record where possible)

- **Direct connection or via exchange (e.g. Clearinghouse)**
  - CDS Hooks request to payer

- **Health Plan**
  - (2) Health Plan receives request and evaluates
  - (3) Is PA required?
    - Yes
      - (3a) Coverage rules / templates
    - No
      - (4) Response with documentation requirements if appropriate
  - (8) Convert FHIR to/from X12 if not done by provider application
  - (9) Health Plan Receives PA request and attachments, process request and provides response

**Note:** If Pended, provider subscribes to PA request and retrieves response when status changes.
UNLOCKING PAYER INFORMATION TO IMPROVE CARE
HIMSS19 Demonstration

Activities by the Numbers | Stats
--- | ---
Total practice runs | 3
Total public runs | 23
Filming runs | 1
Total variations | 14
Total roles | 96
Total role system issues | 7
Role availability | 92.7%

Activities by the Numbers | Stats
--- | ---
AEGIS Touchstone available | 100%
Total MCs | 6
Total EHRs | 2
Total Payer/Partner | 4
Total Payer only | 5
Total Sponsors | 16
Number of visitors (approx.) | 500
Percent that left during vignette | < 10%

CLINICAL SUMMARY

Da Vinci is demonstrating the ability to exchange information between payers and providers using HL7® FHIR® and CDS Hooks® as part of the Interoperability Showcase.

The vignette describes a clinical encounter for 78-year-old Asian women named Dara that starts with her primary care physician, proceeds to a cardiologist who admits Dara to the hospital for an angiogram and observation where it is determined that her chronic obstructive pulmonary disease has progressed to the point that she needs supplemental oxygen.

As Dara returns to her primary care physician, her previous medications are reconciled with those prescribed at discharge, the PCP reports the medication reconciliation, in support of a quality measure the Medicare Advantage program is following for its members.

The visual describes the interactions demonstrated at HIMSS Interoperability Showcase, direction of each exchange, the FHIR standards used, the setting where the interaction is occurring and the participants.

Each step represents a provider – payer exchange using FHIR IG.
For More Information
Bob Dieterle CEO, EnableCare LLC -- Da Vinci Program Office
rdieterle@enablecare.us
MiHIN + Interoperability Institute

Matt Englehart
Director of Research and Development
Part of the MiHIN Family of Organizations

Non-profit LLC

Non-profit 501c#

Public Benefit Corporation

right 2019 - Michigan Health Information Network Shared Services
Interoperability Institute, LLC

Mission
The Interoperability Institute develops solutions and the next generation workforce required to enable organizations and communities to harness the benefits of interoperability at scale.

Vision
To serve as a focal point for creating communities and environments that accelerate the adoption of interoperability in ways that result in greater health and more impactful delivery of human services.
Interoperability Institute provides a neutral space where:

• Organizations can collectively demonstrate the interoperability of software as a service (SaaS) solutions

• People can learn modern technologies or standards like FHIR

• Novel innovations can safely encounter complex synthetic real-world scenarios before being deployed or adopted in production
Interoperability Institute Pillars

Interoperability Land®

Interoperability Hackathons & Training

Interoperability Workforce Program
Introducing Interoperability Land™

A collaboration platform designed to power the future of multi-organization development, integration, acceptance, and testing of innovative technologies and open standards.

- **Interoperability Land**
  - Build and test multi-organizational interoperable systems
  - Create highly realistic test scenarios with synthetic healthcare data
  - Exercise full control over intellectual property and data

- **Create and share meaningful visualizations and models**
- **Reduce the cost of creating and managing a developer API sandbox**
- **Showcase applications, services and community contributions**

- **Create and host events to focus on a problem, service, API or topic**
- **Harness the power of the community to solve interoperability problems**
- **Gain insights into how standards are being implemented in the real world**

**Shared Legal and Governance Framework**

**Network of Trusted “Sandboxes”**

**Open API’s**

**Patient Gen**

**PIT**

**Ring of PITs**

**Personas**
Interoperability Hackathon Events

Event Prep & Materials
Develop event scope, prepare necessary materials for event, and support technical planning. Select and/or create Personas and supporting activities.

Event Promotion
Identify target audience, define participant roles, and design activities for successful outcomes.

Test Environment
Provide Turnkey event environment with Test Data and Sample Code for interoperability testing and development of apps.

Event Facilitation
Support training and demonstrations for event participants. Provide skilled resources for facilitation of technical and business activities.

Follow-Up
Post-event review and feedback, collect marketing and media material, and consolidation of materials.
Interoperability Hackathon Themes

Open APIs

NPRM’s

Value Based Care

Public Health

Care Planning & Coordination

3rd Party App Development

Social Determinants

Patient Centered Care

eConsent
Addressing the Talent Gap in Information Technology and Healthcare

• Over the next 5 years, Michigan employer demand for IT and healthcare professionals with college degrees is expected to increase by as much as 35%.
  
  **SOURCE:** MI DTMB Bureau of Labor Market Information and Strategic Initiatives, 2019

• Only 28% of Michigan residents ages 25 to 64 have obtained a bachelor’s degree.
  

• Approximately 60% of Michigan’s college graduates move to other states. Losses are greatest among graduates in technical fields.
  
  **SOURCE:** U.S. Department of Education
Annually MiHIN Trains 80+ Interns with Diverse Backgrounds
Interoperability Workforce Program

Leverage the existing success of the MiHIN internship program to launch a broader internship training and part time employment service to meet growing future talent demands (informatics, information technology, data science, cyber security, artificial intelligence, advanced cloud services, etc.)
Thank you!

Matt Englehart
Director of Research and Development
matt.englehart@mihn.org