



Interoperability Land™

*Curriculum Project and Partnership
using Interoperability Land™*

AGENDA

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Partnership Between
HIMSS, UM, & IOI

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from the Classroom

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INTEROPERABILITY™ LAND



- Cloud-hosted platform
- Highly realistic and clinically relevant synthetic patient data
- Compliant with HL7® FHIR® standards
- No PHI disclosure risks
- Enables advanced interoperability testing and development



IOL's Synthetic FHIR Data



Personas are realistic and complete synthetic representations of a person.

Persona Narrative

Sarah Thompson

Sarah Thompson is struggling with a heroin/opioid addiction. She is working with a case manager and some of her information is stored out-of-state...

Facts of Interest:

- Charged with DUI and possession of a Level 1 controlled substance
- Goes to an out-of-state maintenance treatment facility in Toledo, OH
- Attends weekly progress meeting with care coordinator who monitors her progress
- Completed 12-month methadone outpatient program
- On Wellbutrin for depression and anxiety
- Lab results from regular drug testing

Current Use Cases:

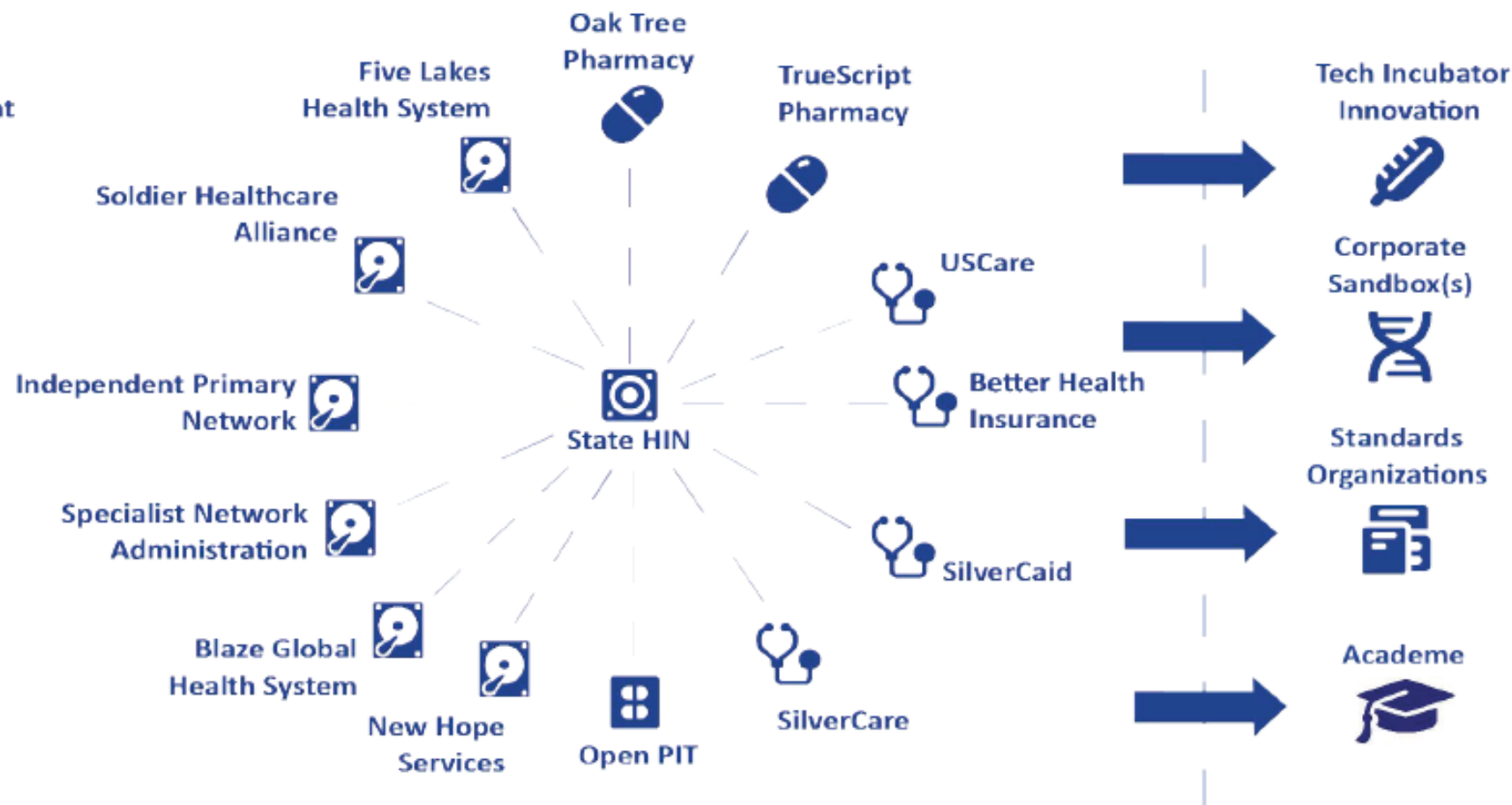
- Health Risk Assessment
- Opioid Monitoring
- Statewide Lab Orders-Results
- Medication History
- Find Patient Records



PatientGen is a HL7 FHIR-compatible test data generator that produces realistic patient histories involving clinically relevant patient encounters

- Generates “SimPatients” at scale for developing and testing healthcare software
- Patients progress through health states via symptoms, encounters, observations, diagnoses, medications and procedures
- Produces realistic case histories using real U.S. population statistics
 - Patient demographics
 - Incidence and prevalence of health conditions
 - Complications & mortality
- Populates a realistic healthcare network having multiple FHIR databases

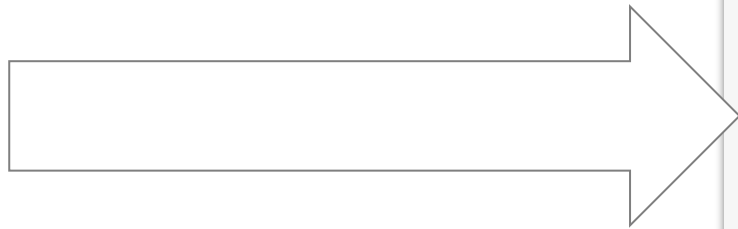
3rd Party App Development



Student's View of IOL

After Login

- Access via any Browser
- 12 Different FHIR Pits
- Drill-down to see FHIR resources



Learning Zone 2

[All Sandboxes](#) > [Learning Zone 2](#)

InterOp PITs Settings Backup

Five Lakes Health System HL7® FHIR® Pilot Interoperability Testbed ehr1	Soldier Healthcare Alliance HL7® FHIR® Pilot Interoperability Testbed ehr2	Independent Primary Network HL7® FHIR® Pilot Interoperability Testbed ehr3	Specialist Network Administration HL7® FHIR® Pilot Interoperability Testbed ehr4
New Hope Services HL7® FHIR® Pilot Interoperability Testbed ehr5	Oak Tree Pharmacy HL7® FHIR® Pilot Interoperability Testbed pharm1	TrueScript Pharmacy HL7® FHIR® Pilot Interoperability Testbed pharm2	Better Health Insurance HL7® FHIR® Pilot Interoperability Testbed payer1
SilverCaid HL7® FHIR® Pilot Interoperability Testbed payer2	USCare HL7® FHIR® Pilot Interoperability Testbed payer3	SilverCare HL7® FHIR® Pilot Interoperability Testbed payer4	MiHIN HL7® FHIR® Pilot Interoperability Testbed hin

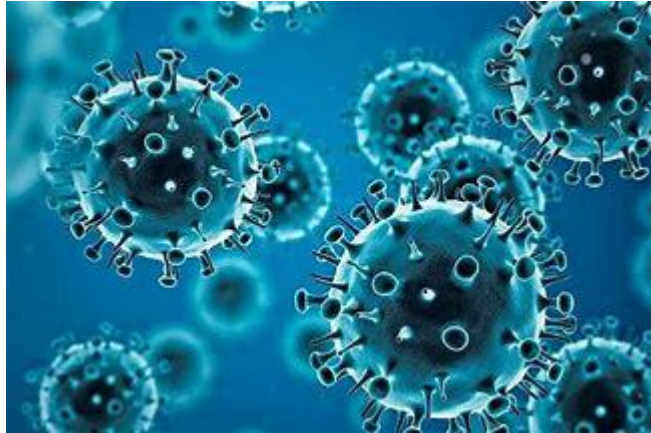


Partnership

MI HIMSS, UM, IOI

Setting the Stage: Academic Year 2020 - 2021

- COVID-19 reaches pandemic proportions
- UM staffing, funding frozen
- Course projects planned but interns “orphaned”



Solution: Unique Internship Partnership



HIMSS™

MICHIGAN CHAPTER

- Intern sponsorship
- Student MI HIMSS membership
- Healthcare industry experts (state/national/global) to advise, review, connect to others
- Focus on interoperability, standards, public policy, education, professional development



MEDICAL SCHOOL
UNIVERSITY OF MICHIGAN

Health Infrastructures
& Learning Systems

- Academic leadership
- Hands-on curriculum development, real world software scenarios & analytics
- Course covers UM's Health informatics program (Med School, Schools of Information and Public Health)



**INTEROPERABILITY
INSTITUTE**

- IOI intern sponsored by MiHIN
- Intern management
- IOL platform for healthcare ecosystem simulation and multi-organizational testing
- Synthetic data generation
- FHIR-based tools & SMART-on-FHIR application development

Opportunities, Challenges and Next Steps

- Create, enhance real-world health informatics curricula for students
- Educate students on healthcare interoperability, standards and work process challenges
- Provide easy-to-use technology tools, synthetic data and test beds
- Develop ability for students to create complex queries and analytics to solve real problems
- Provide healthcare industry experts to review, advise and revise
- Provide conference forums to publicize progress, gain collaborators



Instructor's Perspective

Initial Hands-on Interoperability Training for the Classroom

Student Audience

Masters students
Health informatics program
First semester

All strong academically
Few software developers
Few clinicians

Lesson 1

Introducing
Interoperability & FHIR

Lesson 2

Understanding FHIR
Resources & Queries via
the HAPI FHIR server

Lesson 3

Using FHIR APIs

Lesson 4

Introducing
SMART-on-FHIR APPS

Initial Student Responses

- Students recognized the usefulness of securely sharing FHIR data
- Students indicated that they learned a significant amount from the lessons

- **IOL IS EASY TO USE**

I really liked how it was all set up, I felt I got a good understanding of how everything is interrelated and organized by using Interoperability Land™

- **BENEFIT OF HANDS-ON TRAINING**

I enjoyed the fact that I was able to gain a better understanding of HL7. I have heard that term for years and had some idea of what it meant, but this helped me visualize how it actually works.

- **ADD LIVE DEMOS OR VIDEOS**

I think going over the lessons in an optional "discussion" session would help those who had issues with the software. This way, we could watch the instructors in case we had problems.

- **PROVIDE MORE & BETTER CONTEXT**

I think it will be helpful to use real life testing scenarios when using POSTman and Interoperability Land™ rather than arbitrary data.

- **HIGHLIGHT THE PURPOSE OF EACH TASK**

It will also help if you include the expected outcome or objective in these scenarios of what are we trying to accomplish exactly.

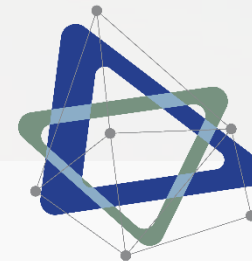
What's Next for Further Curriculum Development?

- Improve the existing lessons per student feedback
- Enhance the final SMART-on-FHIR APP lesson significantly
- Develop several new "next level" lessons, perhaps covering. . .
 - FHIR resource anatomy and development
 - Complex FHIR queries across multiple sources
 - FHIR data parsing
 - Existing SMART-on-FHIR app authentication, integration and testing
 - New SMART-on-FHIR app prototype building

Intern's Insights

Intern's Insights

- Gained knowledge and exposure to HL7® FHIR® resources
- Opportunity to try out new things
 - Basic training in web applications
 - Hands on experience with FHIR resources
 - Writing out learning objectives
 - Preparing curriculum and creating instructional materials



Thank you!

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