# FY2022

INTEROPERABILITY INSTITUTE

# Annual
# Report

Prepared By :

**Interoperability Institute**

Presented For:

**Interoperability Institute Board of Directors**

**INTEROPERABILITY INSTITUTE**

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It was an exciting 2022 at Interoperability Institute (IOI). Our business was affected by economic headwinds, political impacts as TEFCA and QHIN advance health sector interoperability, and Health Information Exchange transitions to Health Data Utilities. Interoperability Institute (IOI) rose to challenges, while continuing to innovate on the application and adoption of new technologies. We delighted in a variety of new business partnerships that enabled us secured our position at the center of interoperability activities in the industry, while accelerating workforce skill building.

It's clear that 2022 was a pivotal year for the adoption of Artificial Intelligence (AI) at IOI. Noting the 'big bang' of ChatGPT adoption, the IOI team is accelerating the adoption of Large Language Models and scaling of the four-decade long journey of AI from general purpose computing to Generative-AI that rapidly transition workflows and business processes. Engagements with academic partners, standards organizations, and industry consortia highlight IOI's commitment to responsible AI adoption. Understanding the potential consequences, both positive and negative, of AI on society and clinical care is crucial, and collaborating with these stakeholders is a proactive approach to mitigating risks and maximizing benefits.

IOI is revolutionizing our sandbox platform with a deeper understanding of digital twin standards and digital public goods. We continue to provide global leadership to the Interop. Community, stewards of Meld, an open-source health sector community sandbox platform. Over 500 Users spin up FHIR servers daily, that enable secure/sharable workspaces offering multi-tenancy, are pre-loaded with SMART-on-FHIR applications, pre-loaded with synthetic and de-identified data, testing and validation tools, and offers a FHIR Resource Manager to build interoperability solutions in a safe environment that simulates pathways to production.

We continue to take a leadership role in advancing industry standards, such as the Health Level Seven (HL7) Fast Healthcare Interoperability Resources (FHIR), providing subject matter expertise and the Meld platform to HL7 FHIR Accelerators, industry Connectathon events and federal programs from CMS and ONC.

We continue to support our affiliate companies with IOI development squads to strengthen the velocity and delivery of Dev/Sec/Ops (Development, Security, Operations) and drive Agile process improvements, and Continuous Integration/Continuous Delivery. IOI has incorporated Quality Assurance for software testing validation into our squad structure.
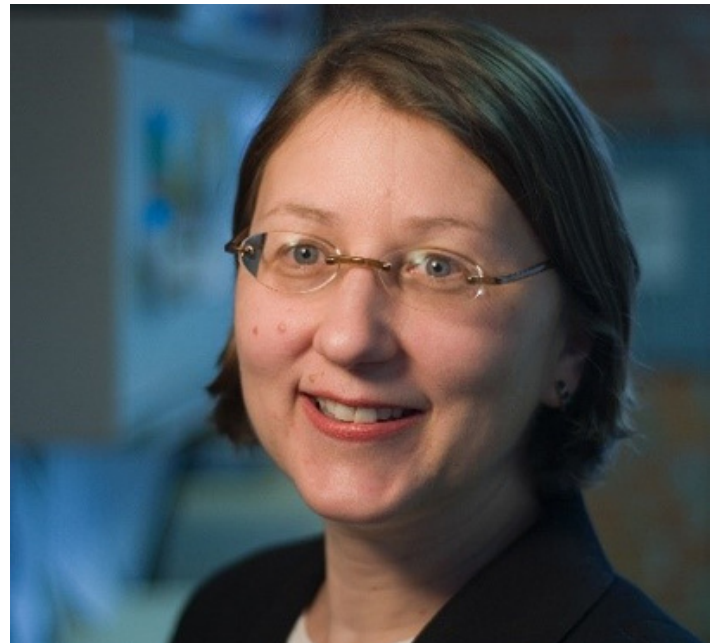
Enterprise Services, Human Resource Shared Services, Diversity, Equity and Inclusion (DEI) continue to provide efficient operations at all levels, including vendor relationships, legal and financial management, in addition to maintaining virtual workspaces as the COVID pandemic continued to persist through the majority of 2022.

Our Workforce program continues to work with academic partners to offer paid Student Internships and expanded the program to include our first apprenticeship cohort. IOI looks at new models to advance HIT skill building through our workforce program, apprenticeships provide both on-the-job training and certificate training experiences.

Looking ahead IOI strives to unlock innovation to solve previously impossible problems, build human skills and advance our strategic partnerships with AWS, IHE, BPM+, HL7 and others to further accelerate our engagement with industry innovators. We faced many challenges as the world starts to emerge from the COVID pandemic at the end of 2022, magnifying the importance of our collaborations, capabilities to work as a virtual organization, and provide excellent software and services. I would not be prouder of our staff and am excited to build the future together.

Mary Kratz

Mary Kratz
Executive Vice President

# About the Interoperability Institute

Interoperability Institute (IOI) is a non-profit organization, created to enable organizations and communities to harness the benefits of interoperability at scale. This mission is achieved through next generation workforce training, interoperability testbed standardization, and solution development focused on enabling interoperability and standards. IOI was formed as a Limited Liability Company (LLC) in 2019, and was awarded non-profit status in 2021.

# Core Values

Our core principles are driving success and impact on the field of interoperability and healthcare. Let's break down these principles:

**Passionate and Determined:** IOI's passion and determination are essential qualities for any organization seeking to make a significant impact. Being high-performing and focused problem solvers suggests a commitment to excellence and the drive to overcome challenges.

**Growth and Learning:** The emphasis on growth and learning is crucial in a rapidly evolving field like healthcare and interoperability. This commitment to continuous improvement ensures that IOI remains at the forefront of innovation and best practices.

**Inventive and Inspiring:** Being inventive and inspiring is a testament to IOI's ability to think outside the box and inspire others to do the same. Promoting diversity of thought and curiosity fosters an environment where new and exciting ideas can flourish.

**Respectful and Humble:** These values are foundational for building strong teams and relationships. Being respectful and humble not only ensures a positive team environment but also contributes to the organization's integrity and trustworthiness.

**Integrity and Trust**: Integrity and trust are vital in the healthcare sector, where patient data and well-being are at stake. IOI's commitment to these principles is a testament to its ethical approach to its work.

# Our Ongoing Commitment to Diversity, Equity and Inclusion

At IOI, we recognize that our diversity is our greatest strength. We draw on the differences in who we are, what we've experienced, and how we think to best serve our stakeholders and our communities.

Because IOI serves everyone, we understand the importance of including everyone. This means we strive to hire, develop, and retain qualified employees that are not only diverse in thinking, but are also diverse in race, gender, gender identity and/or gender expression, age, religion or belief, sexual orientation, physical, mental or sensory disability, citizenship, family or partnership status, socioeconomic upbringing, and more.

We know intentionality around diversity, equity, and inclusion are critical to the wellbeing of our staff and the success of our organization, which is why we are committed to constantly striving to improve.

# 2022 Impact Statement

- Collection of data on staff experiences and perceptions of diversity, equity, and inclusion.
- Development of strategic goals for this year and next based on our completed needs analysis.
- Creation of over fifty unique DEI-related learning opportunities for our staff.
- Embedding DEI-related learning and conversation into team practices.
- Addition of pronoun identification into our CRM tool, on-boarding materials, and email signatures.
- Implementation of learning around inclusive practices and unconscious bias into our onboarding process.
- Recognition of MLK Day and Juneteenth as observed holidays, and approval of volunteer hours for staff on Veteran's Day.
- Creation avenues for staff to learn about and participate in observance of Pride Month, Black History Month, and Mental Health Awareness Month.

# Our Current Environment

At IOI, we believe that everyone should be able to bring their full selves to work. That's why we are fostering a culture where our differences are valued, and all staff feel a sense of belonging. With this goal in mind, we aspire to create a workforce that's representative of the communities we serve, and while we are still on that journey, we commit to sharing where we are towards this goal

# Areas for improvement:
## *Where we Aspire to Grow*

| 1 | To strive towards an even more diverse workforce by increasing diversity in our talent pipeline |

| 2 | To foster a culture of learning, growth, and discussion |

| 3 | To cultivate a work environment where everyone feels heard, valued, and respected |

| 4 | To make diversity in leadership a strategic mission across all levels of formal and informal leadership |

| 5 | To become an industry leader in using Health IT to increase healthy equity and address social determinants of health that lead to disparities in health outcomes |

# Spotlight on Achievements

**InterOp.Community launched**

In 2021 IOI stewarded InterOp.Community for the purpose of achieving data interoperability through providing a Cloud-based next generation sandbox to help build, launch, and test health apps as well as model real world healthcare scenarios with synthetic data. IOI joined forces with Integrating the Healthcare Enterprise (IHE) USA, Interopion, BPM+ Health, Red Hat, and Qvera to provide a unique open-source technology incubator and committed to providing a platform for thriving open-source communities. IOI is both investing in the collaborative and drawing from it to mature its original Interoperability Land™ product, which is a safe, collaborative, simulated healthcare environment. IOI and its unique partnership with InterOp.Community brings together powerful innovative tools.

**Introducing Meld | a virtual sandbox**

A key to engaging implementation solutions is to provide communities of interest with a virtual technological environment, commonly referred to as a "sandbox", that allows users to design, test and prototype software both independently and/or collaboratively with the option to transfer selected activities to a private environment at any time. This flexibility allows developers to innovate with tools of an enterprise environment and none of the overhead.

The fully synthetic data existing in Meld allows for users to "fail forward" when working with the data, as there is no risk of Protected Health Information (PHI) or Personally Identifiable information (PII) exposure. Each Meld user has the ability to create sandboxes rapidly, preloaded with synthetic data that is available in FHIR® DSTU2, FHIR® STU3, and FHIR® R4 formats.

**Open-source sandbox**

IOI developed and delivered Meld through InterOp.Community as an open-source healthcare sandbox. IOI takes a leadership role in the code curation of the Meld open-source code base to improve the usability of the Meld sandbox with added functionality and enhanced user experiences.

# Spotlight on Achievements, Cont.

**eConsent Collaborative**

The February 2021 Industry Day event confirmed a need for a national electronic consent or eConsent collaborative from the public, private, SDO, and not-profit entities. IOI is committed to the eConsent collaborative community-ofpractice (COP) by stewarding the eConsentCollaborative website with a focus on the use of eConsent within the healthcare domain, with a particular initial focus on Advanced Care Planning (ACP). The purpose of the collaborative is to bring together stakeholders from across healthcare to work together to find viable, interoperable health IT solutions in this space. This is an open Community of Practice emerging through the InterOp.Community, and its work products will be shared with organizations worldwide that could benefit from their use.

Hosting this activity is a coalition of non-profit organizations and standards-development groups whose decisions will be driven by a Steering Committee. Currently involved in the activity are:

- BPM+ Health (BPM+) – a healthcare community-of-practice focused on sharable pathways and open standards.
- Interoperability Institute (IOI) – Serves the industry via the employment of solutions development and workforce training to harness the benefits of interoperability at scale.
- Object Management Group (OMG) – an international, open membership, not-for-profit technology standards consortium.
- Point of Care Partners – a leading management consulting firm that assists healthcare organizations in evaluating, developing, and implementing health information management strategies.

## Synthetic Data Packs

Synthetic data products are created by a statistic population health model generator that is based on true patient data elements. Each data set is made up of highly realistic synthetic patient data that can be used for testing purposes without risk of disclosing PHI. Additionally, personas are available for specific use case needs

- Synthetic data packs on the AW Marketplace are being updated and refreshed. Data packs will include but will not be limited to ADT Packs, Covid Packs, CCD Packs and Combo data packs, FHIR data packs (individual and population based) and more.
- Personas including pregnancy, pharyngitis, sexually transmitted infection, breast cancer, and congestive heart failure are available

Bespoke data packs are available for individual patients, specific use cases and large populations in FHIR, ADT and CCD. IOI Synthetic Data Manager can customize data packs to fit any use cases

## Interoperability Land™

IOI provides a private sandbox called Interoperability Land™ (IOL), which is a fee-for-service proprietary 'locker' offering available on the AWS Marketplace. Organizations can test using millions of simulated patient data files or highly realistic personas across the synthetic health care ecosystem. The FHIR enabled data in IOL is arranged across a collection of synthetic health care entities to reflect a realistic health care environment. IOL is a secure Cloud-based OAuth 2.0 supported hosted environment. Using IOL, you can quickly stand up your internal interoperability lab to test the compliance of your solutions, educate staff, or securely collaborate with partners on events or development efforts.

# R&D Accomplishments & Milestones

The IOI software Development teams accomplished many key milestones during 2022. The IOI Development squads provided strategic leadership as our affiliate companies made the transition to the Scaled Agile Framework (SAFe), implementing workflows to plan and manage software development activities. Alignment with Service Delivery enabled systems thinking to increase the velocity of our pathways to production service. IOI also led the Improvements Group, setting technology standards and best practices across the technical teams. This was a key enabler to help our Health Information Exchange (HIE) affiliates rapidly respond to changing market conditions, in addition to designing better software to meets customer demand and changing needs.

IOI's Innovation Pipeline was lead by our Research squad. Key accomplishments for 2022 include:

## CYQ2 2022
- Ideation, Creation and Development of instructional materials called 'Introduction to FHIR', that provides training for Academic and Industry Partners.
- Completion of Load Testing of the MELD Sandbox ecosystem

## CYQ3 2022
- Completion of FHIR based Educational Mini Series for IOI Partners. Focus on Prior Authorization and HL7 V2 and V3
- Completion of MELD Well Architected Framework with our cloud managed service provider, Cloudticity.
- Completion of updates and improvements to Patient Gen, our synthetic data generator.

## CYQ4 2022
- Development and Participation in MI HIMSS Academic Consortium & Connectathon.

## CYQ1 2023
- Development of an electronic consent proof-of-concept demonstration to enable interoperability between Health and Human Services, offering cross-organizational interoperability solutions contributed to Meld by MayJuun, and advancing partnerships with the HL7 Gravity community and the National Interoperability Collaborative.
- IOI Innovation Squad published a FHIR Claims Dataset to the Open-Source MELD Sandbox to further improve  synthetic data offerings within the public domain sandbox.
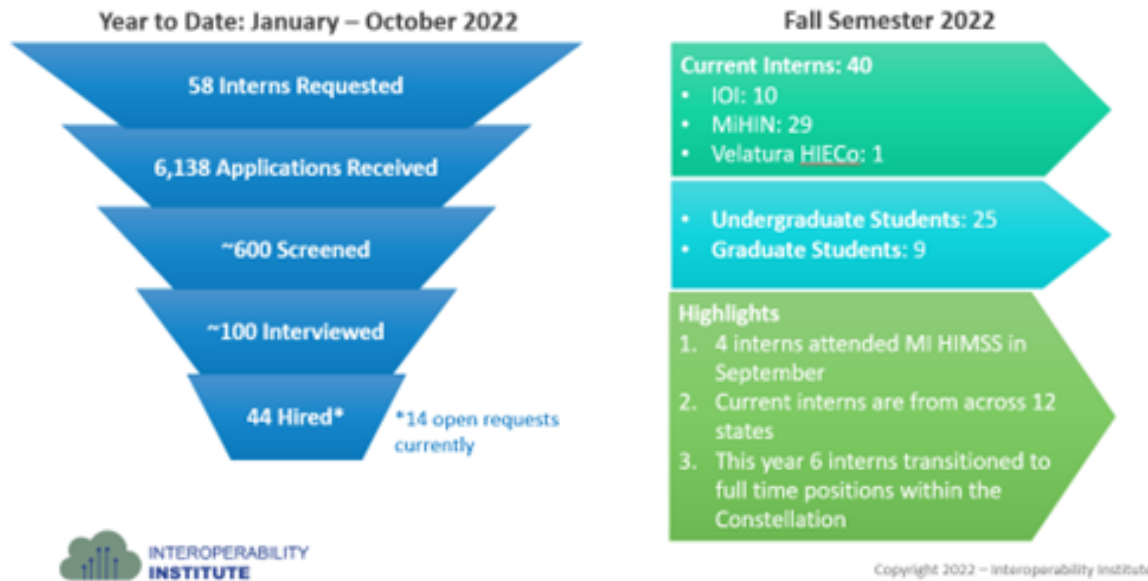
## CYQ2 2023
- OI Innovation Squad created 3 distinct personas to satisfy First Trimester Bleeding Use Cases in FHIR resources with a grant from the AWS Health Equity initiative and in partnership with the American College of Emergency Physicians.
- IOI Innovation Squad deployed MELD on RedHat Open Shift Platform as an additional option for our private sandbox customers.

# Workforce Development Program

IOI's nationally renowned Workforce Development Program is designed to provide early career opportunities to address the talent gap in information technology and healthcare and ensure the supply of talent meets the current and emerging needs of the healthcare industry.

## Student Internship Program

**Year to Date: January – October 2022**

- 58 Interns Requested
- 6,138 Applications Received
- ~600 Screened
- ~100 Interviewed
- 44 Hired*

*14 open requests currently

INTEROPERABILITY INSTITUTE

**Fall Semester 2022**

Current Interns: 40
- IOI: 10
- MiHIN: 29
- Velatura HIECo: 1

- Undergraduate Students: 25
- Graduate Students: 9

Highlights
1. 4 interns attended MI HIMSS in September
2. Current interns are from across 12 states
3. This year 6 interns transitioned to full time positions within the Constellation

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**Interns**

In 2022, the Workforce Development Program continued the internship program in partnership with MiHIN and Velatura. We had 80 student internship program members to date for 2022. We pride ourselves on bringing in students from various backgrounds and expose them to the health IT industry as a career path opportunity. In 2022, we were pleased to receive the following feedback from student interns through our Internship Program Evaluation survey:

- 72% of interns participated in the survey

- 90% agree their work contributes to the Constellation goals

- 100% responded they have a good working relationship with their team

- 90% felt their knowledge/skills have grown through their experience as an intern

- 86% agreed internship was a valuable experience for career growth

- Overall rated the program – 4.4 stars

**Mentors**

Additionally, we value our mentors who sign up to go above and beyond by supporting and guiding an intern. In 2022, we were pleased to receive the following feedback from mentors through our Internship Program Evaluation survey:

- 64% of mentors participated in the survey

- 100% responded they are excited to be a mentor

- 96% agree their intern's work contributes to the Constellation goals

- 100% responded they have a good working relationship with their intern

- 88% felt their intern's knowledge/skills have grown through their experience as an intern

- 76% felt their knowledge/skills grew from being a mentor

- Overall rated the program – 4.4 stars

In 2022, we had 60 staff members participate as a mentor to at least one student intern. As the Constellation family of companies continues to grow, we always look to our talent pool of student interns to transition to full time positions within. In 2022, **we successfully transitioned 5 student interns to full time team members.**
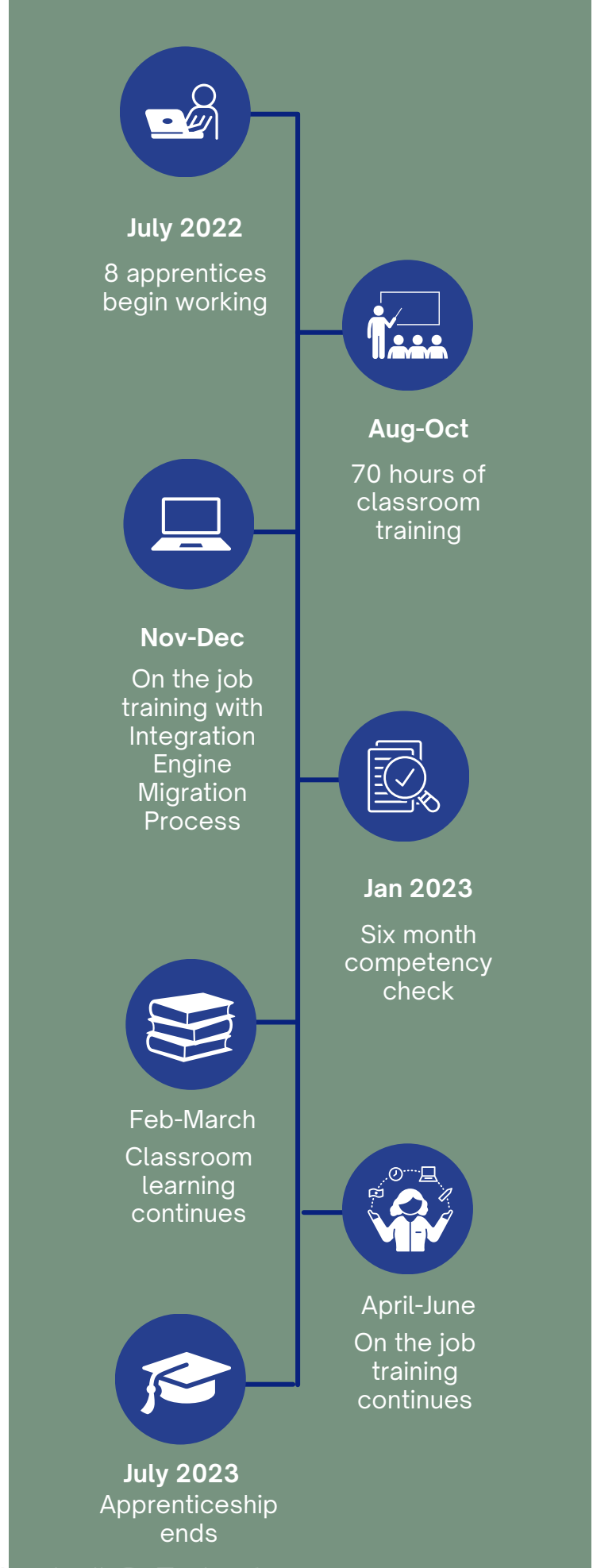
**Apprentices**

In July 2022, the Workforce Development team was very excited to announce the brand-new launch of an Apprenticeship Program. Apprenticeship programs are a workforce development strategy to provide on the job training paired with related technical instruction, or classroom training. These programs are structured to teach specific skills to fill in-demand jobs. The apprenticeship program is focused on launching health IT careers too. However, this program is more structured and more formal than an internship due to the related technical training and certifications. Apprentices are paid to learn in this 12-month program working a minimum of 20 hours/week alongside our full-time team. Apprentices do not have to be students enrolled in a degree program.

The Workforce Development team launched an apprenticeship program with one position to start. This position is the Health IT Interoperability apprenticeship to teach specific skills to support the MiHIN Integration Services team with the QVERA integration engine projects. The Health IT Interoperability Apprentices are working directly with the integration services team on interface engine projects.

The Interoperability Institute partnered with QVERA to provide the QVERA Integration Engine (QIE) Level 1 Certification Training as part of the Workforce Development's Apprenticeship Program for the new Health IT Interoperability Apprentices. The apprentices prepared for a month by participating in an intense 15 hour/week LinkedIn Learning Path curated by our Integration Services Team (Jake Davis), Workforce Development Team Manager (Brandi Briones), and Training Manager (Stephanie Arntson). The courses included all the pre-requisites for the QIE Level 1 Training, which is a live online instructor over 4 days teaching all the basics in an interactive classroom setting with hands-on projects and assessments in a sandbox environment.

- 100% remote with laptop provided

- 12-month program commitment

- Part time position working 20-29 hours per week

- Some computer engineering experience required

- On the job training with integration services team

- Related technical instruction including QVERA Integration Engine Level 1 & 2 Training Certification

**July 2022**
8 apprentices begin working

**Aug-Oct**
70 hours of classroom training

**Nov-Dec**
On the job training with Integration Engine Migration Process

**Jan 2023**
Six month competency check

**Feb-March**
Classroom learning continues

**April-June**
On the job training continues

**July 2023**
Apprenticeship ends

# Looking ahead

The goal is to position IOI as a recognized and serious HIT industry contributor. Our focus is on building trust over time, and improving the following areas:

- Market Exploration and Research Aggregation
- Value Models for Products and Services
- Website Updates Interoperability Land (IOL) Product and Services Market Strategy
- Business Development

**Innovation pipeline**

IOI is dedicated to advancing the healthcare interoperability agenda via the use of open platforms and opensource software. IOI is joining forces with Integrating the Healthcare Enterprise (IHE) USA, Interopion and Red Hat to provide this unique environment which provides the Community of Practice (COP) with an industry convergence point and technology incubator to advance global and interoperable health solutions by providing standards driven interfaces for the common components found in modern healthcare systems such as Electronic Health Record (EHR), hospital, Health Information Exchange (HIE), lab, and insurer. IOI will both invest in the collaboration and draw from it to mature its original InteroperabilityLand™ offering and develop its open-source Meld sandbox.

**Tactical Plan (needs updates)**

In 2021 IOI developed a Tactical Plan to guide us in achieving our strategic goals. The plan outlines the actions supported in achieving goals and objectives for 2021. The plan includes the following business outcomes:

- Enabling organizational success by developing, enhancing, and innovating our HIE solutions.
- Establishing an Industry Engagement Department.
- Providing robust software development and support that exceed our customer expectations.
- Developing and delivering robust staff engagement and training programs for staff of the entire organization and our industry partners.
- Develop and foster Academic, Public, and Private Partnerships.
- Establish IOI Core Operations Capabilities.

**Industry Engagement**

The IOI Industry Engagement Team (IE Team) is dedicated to building stronger industry partnerships and customer relationships designed to meet long-term objectives and provide innovative solutions for our government, academic, and commercial prospects, clients, and investors. Through continuous communication and exchange of information with our industry and academic partners, we can sustain and improve our agile approach to engage with the global interoperability community to develop a strong industry presence. Formal collaboration agreements have been established with Integrating the Health Enterprise (IHE-USA), Mighigan Health Management Information System Society (Mi-HIMSS), Object Management Group, Business Process Modelling for Health (BPM+), Health Level Seven Vulcan, PharmaLedger and the Digital Twin Consortia.

# BOARD OF **MANAGERS**





**Rick Warren (Chair of Board)**

**Larry Wagenknecht (Treasurer)**

**Jim Lee (Secretary)**

**Dr. Michael Ackerman (Board of Managers)**

**Krischa Winright (Board of Managers)**

**Dr. Stanley Huff (Board of Managers)**

# EXECUTIVE**TEAM**

### Dr. Tim Pletcher

Chief Executive Officer

Dr. Tim Pletcher is the Executive Director of the Michigan Health Information Network Shared Services (MiHIN), a public and private nonprofit collaboration dedicated to improving the healthcare experience, improving quality and decreasing cost for Michigan's people by making valuable data available at the point of care through statewide health information sharing.
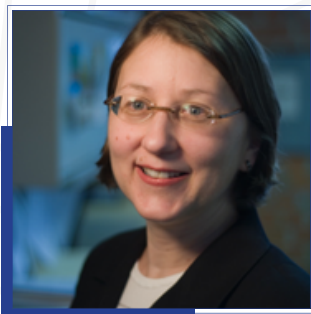
### Mary Kratz

Executive Vice President

Mary Kratz is the Executive Vice President of the Interoperability Institute, an affiliate organization of the Michigan Health Information Network group. Mary is a leader in the field of biomedical informatics, working at the intersection of interoperability, telemedicine and business development.

### Dr. Isabell Pacheco, DSc, FACHE

Chief Operating Officer

Dr. Isabell Pacheco, DScl FACHE is a methodical and well-organized Healthcare Executive with a passion for motivating focused teams toward success. Known for her servant and authentic leadership and enthusiasm in embracing new challenges, Dr. Pacheco is an adaptable and versatile with over 20 years of experience in Healthcare Leadership and Administration.

### Stephanie Schultz

Chief Financial Officer

As Chief Financial Officer (CFO), Stephanie provides strategic leadership for all the organization's financial management functions, including budgeting, forecasting and financial analysis. In her role, she is responsible for the development and implementation of the financial strategies, operating budgets and financial reporting that support the overall mission, goals and objectives of the organization.

# EXECUTIVE**TEAM**

### Rich Fish
Chief Technology Officer

Richard Fish is the Chief Information Security and Infrastructure Officer at Velatura Public Benefit Corporation, a subsidiary of Michigan Health Information Network Shared Services (MiHIN). In his current role, he oversees the enterprise information security program leveraging the latest cloud and serverless computing technologies.

### Bharat Gandhi
Chief Legal Counselor

Bharat Gandhi is the Chief Legal Counselor and Privacy Officer for Michigan Health Information Network Shared Services (MiHIN). In his current role, he oversees all legal matters for MiHIN, and has more than 20 years experience as an advisor to executives in manufacturing industries.

### Shreya Patel
Chief Policy & Privacy Officer

Shreya Patel is an attorney in Michigan, focused in the areas of Healthcare and Privacy. In her role as Chief Policy & Privacy Officer for Michigan Health Information Network (MiHIN), she routinely examines the effect of national and state initiatives on interoperability and participates in the national dialogue surrounding the Trusted Exchange Framework and Common Agreement (TEFCA) and Final Interoperability Rules from the Office of National Coordinator for Health IT (ONC) and Center for Medicare & Medicaid Services (CMS).