







# INTEROPERABILITY LAND™ QuickStart Guide

# Interoperability Land (IOL) Overview

- Interoperability Land is a shared digital space that allows advanced interoperability testing and development across different organizations and systems through data visualization.
- This unique application utilizes **PatientGen™**, a realistic synthetic healthcare test data generator designed to showcase new technology, promote standards (e.g. HL7 FHIR®), and accelerate interoperability.
- **This synthetic ecosystem allows healthcare organizations to:**
  - Safely design, develop and test healthcare apps and services with no risk of disclosing protected health information with reusable personas spanning the network like real patients' interactions
  - Demonstrate apps and services in an engaging and meaningful way using data visualization to reveal interoperability between systems
  - Rigorously test and certify that applications meet standards, performance and scalability requirements
  - Collaborate with other organizations to develop and test interoperable, standards-compliant solutions
  - Host collaborative events to promote learning and standards-based technology adoption
  - Deliver higher quality applications and services faster to market

# Ring of FHIR Overview

- Composed of:
    - 11 FHIR PIT's - servers that represent real world healthcare organizations
    - Health Information Network that includes
      - Active Care Relationship Server (ACRS) that maps patient provider attributions
      - A Health Directory Server that lists endpoints for healthcare practitioners
  - All FHIR PIT's are populated with synthetic healthcare data
  - Each FHIR PIT has a unique RESTful end point and a simple web user interface
  - Each FHIR PIT is secured with basic authentication
-  EHR PITs (5)
    - Five Lakes Health System
    - Soldier Healthcare Alliance
    - Independent Primary Network
    - Specialist Network Administration
    - New Hope Services
  -  Pharmacy PITs (2)
    - Oak Tree Pharmacy
    - TrueScript Pharmacy
  -  Payer PITs (3)
    - Better Health Insurance
    - HealthCaid, HealthCare
    - USCare
  -  Health Information Network (1)
    - Michigan Health Information Network (MiHIN)

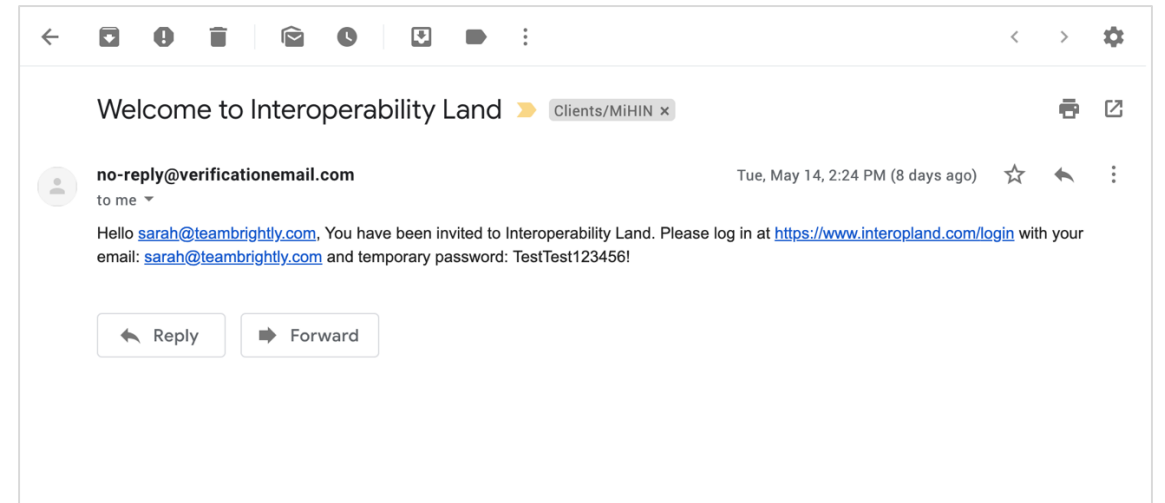
# Synthetic FHIR Resources

Synthetic FHIR resources are mapped to FHIR PIT's based on the FHIR PIT's function (e.g. EHR, Payer, HD, ACRS, etc.)

- Encounter
- Condition
- MedicationAdministration
- MedicationRequest
- MedicationDispense
- MedicationStatement
- Organization
- Patient
- Practitioner
- Procedure
- CarePlan
- Medication

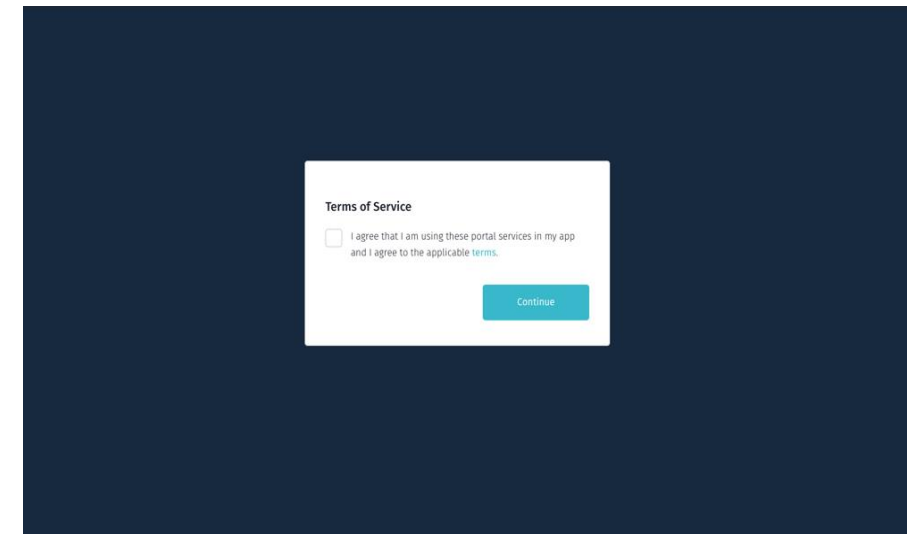
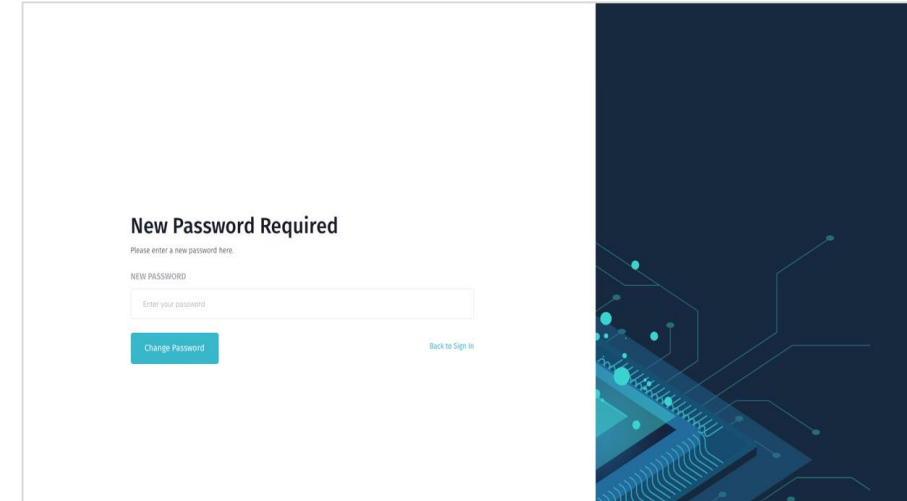
# Step 1: Getting Started

1. Prior to the event you will get a temporary login sent to your specified email address
2. Click the link in the email or open your internet browser and enter the following URL:  
<https://www.interopland.com/login>



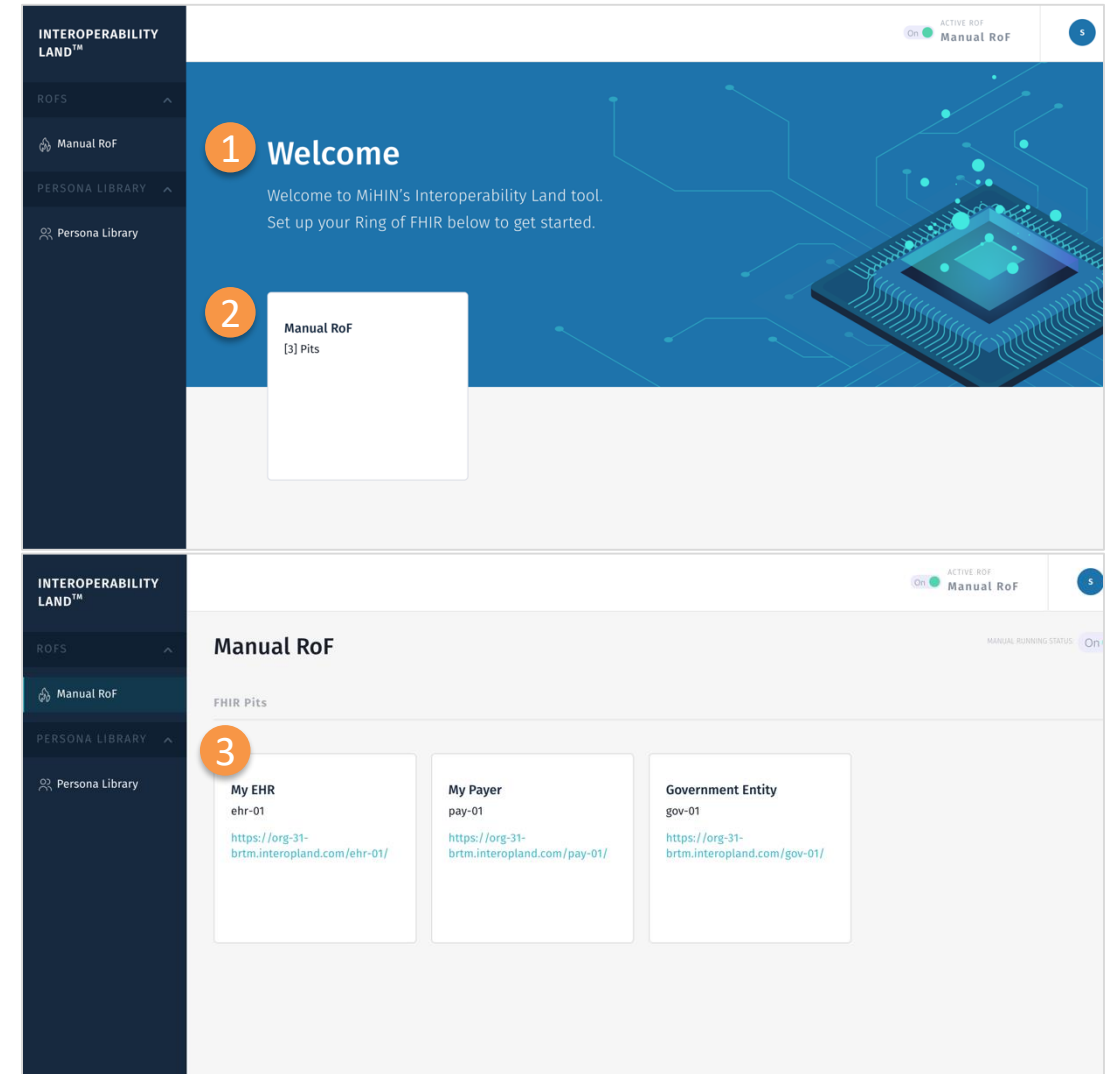
## Step 2: Log In

1. Log in to Interoperability Land using the provided temporary credentials
2. Upon logging in you will be asked to reset your password
3. Accept the application Terms and Conditions before proceeding



## Step 3: Explore the IOL UI

1. The Dashboard shows you the ROF(s) you have access to
2. Enter the ROF by clicking the white tile or use the left-hand navigation to view the ROF landing page
3. View basic pit details on the white tiles pictured and click on a tile to view additional pit information



# Step 4: FHIR-PIT Details Page

1. FHIR-PIT details page includes information on the type of pit and link to access it
2. View Username, Password, and Basic Auth Credentials
3. View Capabilities Statement

The screenshots show the 'Interoperability Land' interface. The left sidebar contains 'ROFS', 'Manual', 'PERSONA LIBRARY', and 'Persona Library'. The top right shows 'ACTIVE ROFS' and 'Manual'.

**Screenshot 1: Overview Tab**

- Five Lakes Health System**
- Overview** | Capabilities Statement
- Warning: This is not a production server! Do not store any information here that contains personal health information or any other confidential information. This server will be regularly purged and reloaded with fixed test data.
- Link:** <https://org-31-brtmn.interopland.com/five-lakes-health-system/>
- Username:** mihin\_hapi\_fhir
- Password:** BokAFWRgPxGTETmdMRV5WGK4bRnlv5H9ef2
- Basic Auth Credentials:** bWloaW5faGfwaV9maGlyOkIva0FGVJnUHHHVEVUBWRNULYV0draTRIUm5sdjVIQWvmMg==

**Screenshot 2: Capabilities Statement Tab**

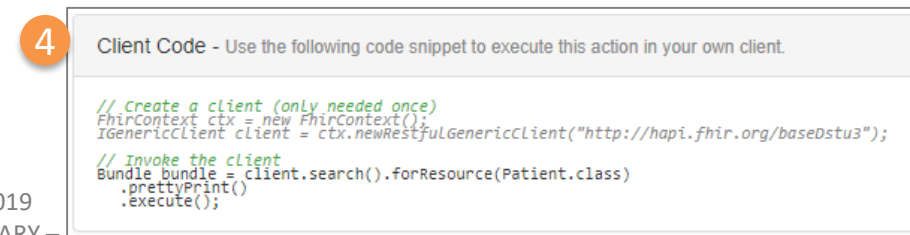
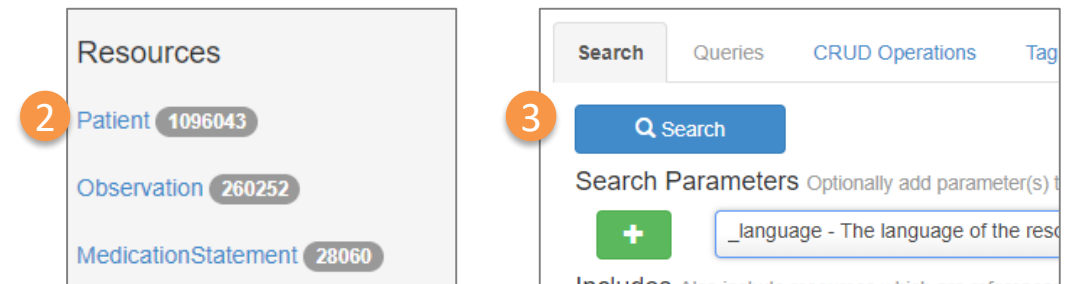
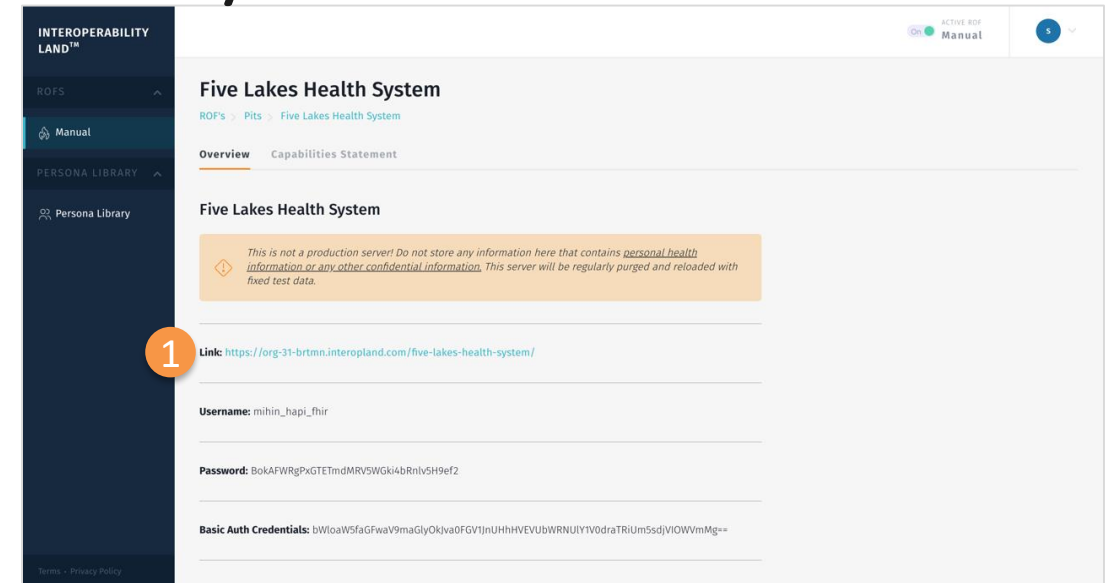
- Five Lakes Health System**
- Capabilities Statement**
- Response Headers**  
content-type: application/fhir+json;charset=utf-8
- Result Body JSON resource**  
**Raw Message**

```
{
  "resourceType": "CapabilityStatement",
  "status": "active",
  "date": "2019-05-24T19:56:20+00:00",
  "publisher": "Not provided",
  "kind": "instance",
  "software": {
    "name": "HAPI FHIR Server",
    "version": "3.7.0"
  },
  "implementation": {
    "description": "HAPI FHIR DSTU3 Server",
```



# Step 5: A Simple Query

1. Click link to access FHIR-PIT
2. Click “Patient” in the left rail “Resources” menu
3. Click “Search” to return a Bundle of Patient resources from the server
4. View the generated HAPI FHIR java client code



## Step 5: Continued - A Simple Query

1. View the GET URL to return all Patient resources on the server - [https://\[your base URL\]-qa.interopland.com/five-lakes-health-system/fhir/Patient](https://[your base URL]-qa.interopland.com/five-lakes-health-system/fhir/Patient)
2. View the resources returned in the response bundle
3. View the raw message body content
4. Click “Read” next to a Patient in the “Result Body” section

1 ➤ Request	GET <a href="http://hapi.fhir.org/baseDstu3/Patient?_pretty=true">http://hapi.fhir.org/baseDstu3/Patient?_pretty=true</a>
Request Headers	Accept-Charset: utf-8 Accept: application/fhir+xml;q=1.0, application/fhir+json;q=1.0 User-Agent: HAPI-FHIR/3.8.0-SNAPSHOT (FHIR Client; FHIR 3.0.1/D Accept-Encoding: gzip

2

**Result Body**  
 JSON bundle  
 (24065 bytes)

Bundle contains 20 entries

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ID	Updated
<div>4</div> <div> <a href="#">Read</a> <a href="#">Update</a> </div> <div>Patient/1576427/_history/1</div>	2019-03-06 14:33:07
<div> <a href="#">Read</a> <a href="#">Update</a> </div> <div>Patient/1576428/_history/1</div>	2019-03-06 14:33:12
<div> <a href="#">Read</a> <a href="#">Update</a> </div> <div>Patient/1576430/_history/1</div>	2019-03-06 14:33:17
<div> <a href="#">Read</a> <a href="#">Update</a> </div> <div>Patient/1576432/_history/1</div>	2019-03-06 14:33:21

```
Raw Message
```

```
{
  "resourceType": "Bundle",
  "id": "552bb75-acdf-4f81-a815-3f321c86dada",
  "meta": {
    "lastUpdated": "2019-03-18T01:45:31.561+00:00"
  },
  "type": "searchset",
  "link": [
    {
      "relation": "self",
      "url": "http://hapi.fhir.org/baseDstu3/Patient?_pretty=true"
    },
    {
      "relation": "next",
      "url": "http://hapi.fhir.org/baseDstu3/_getpages=552bb75-acdf-4f81-a815-3f321c86dada_getpagesoffset=20&count=20&_pretty=true&_bundletype=searchset"
    }
  ],
  "entry": [
    {
      "fullUrl": "http://hapi.fhir.org/baseDstu3/Patient/1576427",
      "resource": {
        "resourceType": "Patient",
        "id": "1576427",
        "meta": {
          "versionId": "1",
          "lastUpdated": "2019-03-06T14:33:07.608+00:00"
        },
        "text": {
          "status": "generated",
          "statusReason": "Generated from FHIR JSON via fhir-to-html v3.0.0 (2019-03-06T14:33:07.608+00:00)"
        }
      }
    }
  ]
}
```

## Step 6: A More Advanced Query

1. Click “Patient” in the left rail “Resources” menu
2. Click “Given” and enter “Sarah” in the search field
3. Click the + button and add Family Name to search criteria. Enter “Thompson” in search field
4. Click “Search” to return a Patient resources from the server
5. Click “Read” next to a Patient in the “Result Body” section
6. View the GET URL to return Patient resources on the server - [https://\[your base URL\]-qa.interopland.com/five-lakes-health-system/fhir/Patient?given=Sarah&family=Thompson](https://[your base URL]-qa.interopland.com/five-lakes-health-system/fhir/Patient?given=Sarah&family=Thompson)

The screenshot displays the FHIR interface with the following components:

- Resources Panel:** Located at the top left, it lists three resource types: **Patient** (1096043), **Observation** (260252), and **MedicationStatement** (28060). The **Patient** resource is highlighted with a blue circle and the number 1.
- Search Panel:** Located below the Resources panel, it features a **Search** button (blue circle 4) and a **Search Parameters** section. This section includes two dropdown menus: **given** (A portion of the given name of the patient) and **family** (A portion of the family name of the patient). The **given** dropdown is highlighted with a blue circle 2, and the **family** dropdown is highlighted with a blue circle 3. Both dropdowns show a **Matches** dropdown and the search term **Sarah** and **Thompson** respectively.
- Result Body Panel:** Located at the bottom, it shows the **Result Body** section with a **JSON bundle** (3571 bytes). The **Bundle** contains 1 / 1 entries. The entry is a **Patient** resource with the ID **Patient/SarahThompson/\_history/1**. The **Read** button is highlighted with a blue circle 5. The **Updated** timestamp is **2019-05-26 01:57:39**.
- Raw Message Panel:** Located below the Result Body panel, it displays the raw JSON message for the Patient resource. The JSON includes the **resourceType** (Bundle), **id** (5df66317-9f97-4f92-87a8-69733b8c8232), **meta** (lastUpdated: 2019-05-29T00:55:51.017+00:00), **type** (searchset), **total** (1), **link** (self), and **entry** (a single Patient resource entry with full URL, resource type, id, meta, versionId, lastUpdated, and profile).



## Step 6: Continued - A More Advanced Query

1. In the Raw Message section there will be more information about the Patient
2. Look for “Patient ID” - this can be used to search for more information on the Patient
  - a. ID: “SarahThompson”
  - b. ID: “Patient/2”

```
Result Body 1 Raw Message
JSON resource
(2387 bytes) 2 {
  "resourceType": "Patient",
  "id": "SarahThompson",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2019-05-26T01:57:39.000+00:00",
    "profile": [
      "http://hl7.org/fhir/StructureDefinition/daf-patient"
    ]
  },
  "text": {
    "status": "generated",
    "div": "<div xmlns='http://www.w3.org/1999/xhtml'><div class='hapiHeaderText'>Sarah Leia <b>Thompson </b></div><table class='hapiPropertyTable'><tbody><tr><td>Identifier</td><td>19</td></tr><tr><td>Address</td><td><span>1046 Sanctuary Way </span><br><span>Temperance </span><span>MI </span><span>UNITED STATES </span></td></tr><tr><td>Date of birth</td><td><span>15 October 1991</span></td></tr></tbody></table></div>"
  },
  "extension": [
    {
      "url": "http://hl7.org/fhir/StructureDefinition/us-core-race",
      "valueCodeableConcept": {
        "coding": [
          {
            "system": "urn:oid:2.16.840.1.113883.6.238",
            "code": "2106-2",
            "display": "White"
          }
        ]
      }
    },
    {
      "url": "http://hl7.org/fhir/StructureDefinition/us-core-ethnicity",
      "valueCodeableConcept": {
        "coding": [
          {
            "system": "urn:oid:2.16.840.1.113883.6.238",
            "code": "2186-5",
            "display": "Not Hispanic or Latino"
          }
        ]
      }
    }
  ]
}
```

# Try it with Postman

1. Download Postman - <https://www.getpostman.com/downloads/>
2. Click the down arrow on the orange “New” button and select “Request”
3. Create a request name like “Test Request”
4. Click “Save”
5. Select “Get” and copy the following URL into the “Enter request URL” input box - [https://org-96-ga.interopland.com/five-lakes-health-system/fhir/Patient/SarahThompson/\\_history/1](https://org-96-ga.interopland.com/five-lakes-health-system/fhir/Patient/SarahThompson/_history/1)
6. Click “Authorization” then select “Basic Auth” from the “Type” dropdown menu
7. Enter your user name and password on the right
8. Click “Save”
9. Click “Send”

