Azure IoT Connector for FHIR
(Public Preview)

IoT is fueling opportunities in Healthcare

87%

Percentage of hospitals had some implementation of IoT in 2019

Source: Aruba Network, State of IoT in Healthcare

40%

End of 2020 40% IoT of devices are expected to be used in the health care industry.

Source: Medical Internet of Things and Big Data in Healthcare

$340 billion

IoMT market is projected to reach 340 billion dollars by 2025

Source: MarketWatch report on IoT in Healthcare

Top benefits for health organizations that adopt IoT:

Proactive Care

Improved Therapy Adherence

Reduce chances for human error

Make better informed decisions

Lower Hospital Readmissions

Increase operational efficiency

What is IoT in Healthcare (aka IoMT)?

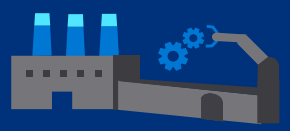
Internet of Medical Things (IoMT)

- Medical Devices
- Ambient Sensors
- Wearables
- Azure IoT Edge
- Secured MCU, Secured OS, Cloud Security — Azure Sphere

Your Healthcare Applications

- Power BI
- PowerApps
- Dynamics 365
- Teams Healthcare
- Mobile & Web Apps
- SMART
- Patient Portals
- Clinician Portals

IoT across Healthcare



Manufacturing

- ✓ Asset Monitoring
- ✓ Operational Efficiency
- ✓ Predictive Maintenance
- ✓ Reduce Waste
- ✓ Improved Worker Safety
- ✓ Facility Management
- ✓ Connected Product

Supply Chain Management

- ✓ Inventory Tracking
- ✓ Decreased Spoilage
- ✓ Theft Reduction
- ✓ Cold Chain Tracking
- ✓ Predictive Demand Management

Healthcare Facilities

- ✓ Smart Hospitals
- ✓ Predictive Maintenance
- ✓ Operational Efficiency
- ✓ Connected Platform
- ✓ Facility Management

Pharmaceuticals

- ✓ Clinical Trials
- ✓ Digital Research Environment
- ✓ Smart Research Facilities
- ✓ Supply Chain Management
- ✓ Connected Factory

In-Home Care

- ✓ Tele-health
- ✓ Remote Monitoring
- ✓ Chronic Disease Management
- ✓ Medication Adherence
- ✓ Lifestyle Management
- ✓ Proactive Care

GE · Olympus · Image Stream Medical · wipro · stryker · GOJO · Purell · JABIL · isansys · sensoria health · onecare · Walmart · Swittons · Roche · PEERBRIDGE · AVNET · pillohealth

Key Scenarios

Patient Monitoring

Use sensors and PROs to monitor patients

- ✓ Remote Care
- ✓ Tele-health
- ✓ Chronic Disease Management
- ✓ Proactive Care
- ✓ Return to Work

Research & Life Sciences

Integrate IoMT & other data for research

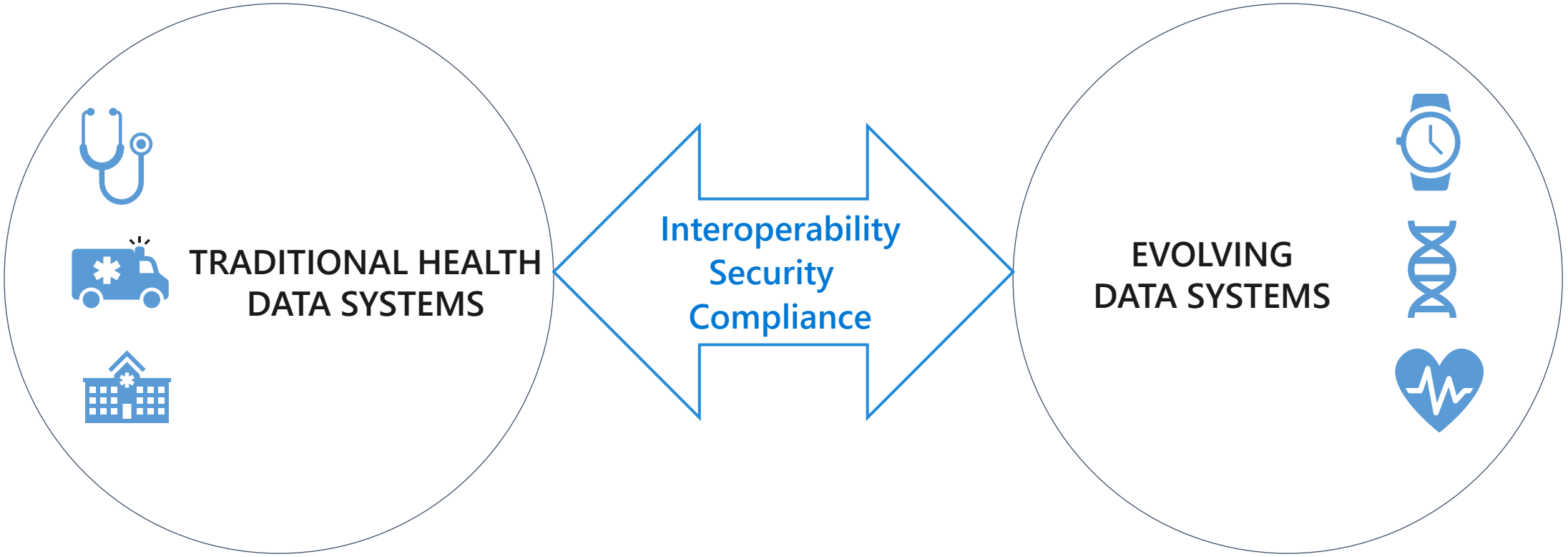
- ✓ Clinical Trials
- ✓ Lab Data Analytics

Smart Hospitals

Streamline hospital processes with automation

- ✓ Augment Care teams
- ✓ Improve workflow safety and efficiency

Challenges with PHI data in IoT



FHIR as a Foundation

Data models for healthcare.

API specifications for exchanging those data models.

Tools and servers for building and interacting with those APIs.

FHIR

FAST
HEALTHCARE
INTEROPERABILITY
RESOURCES

Azure API for FHIR

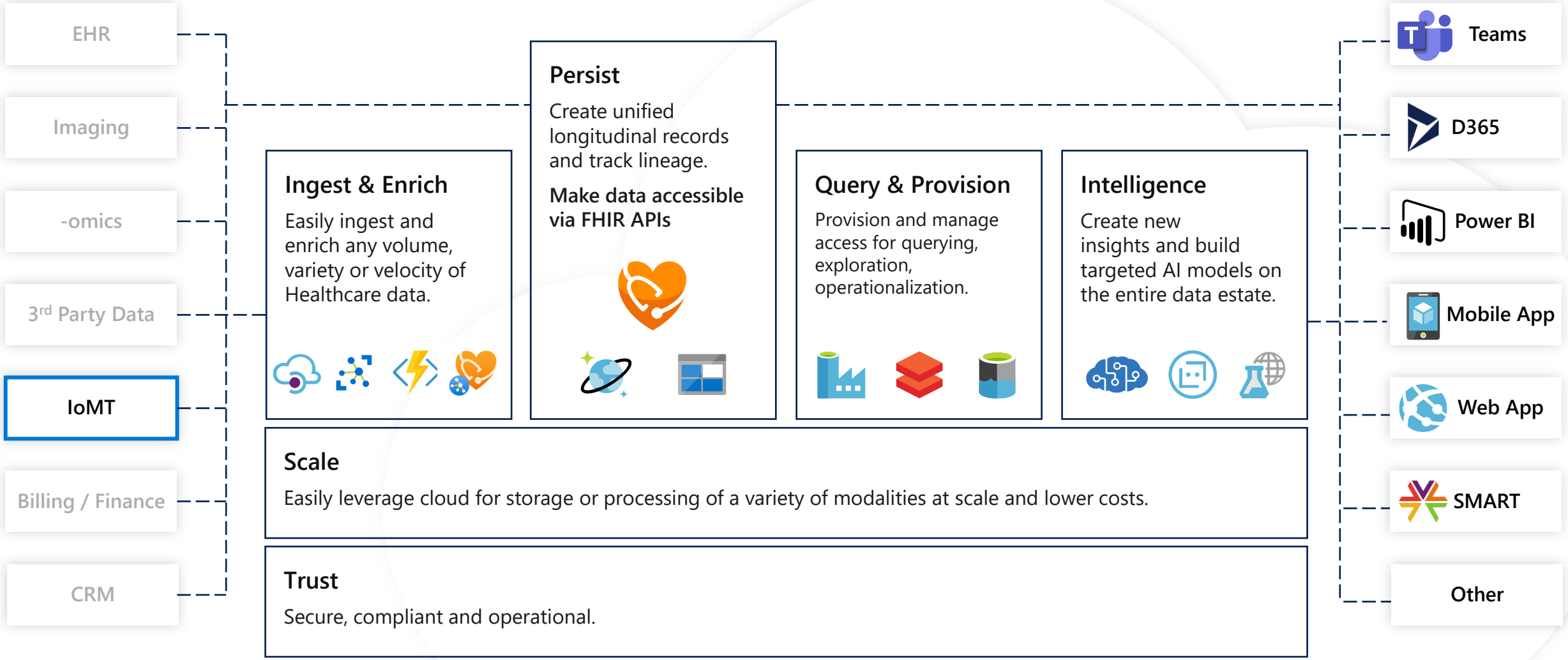
Leverage industry standards for health data interoperability

Securely manage Protected Health Information (PHI) in a compliant environment

Accelerate outcomes with machine learning, data analytics, and AI workloads.

Azure API for FHIR

Enabling Healthcare Solutions in Azure



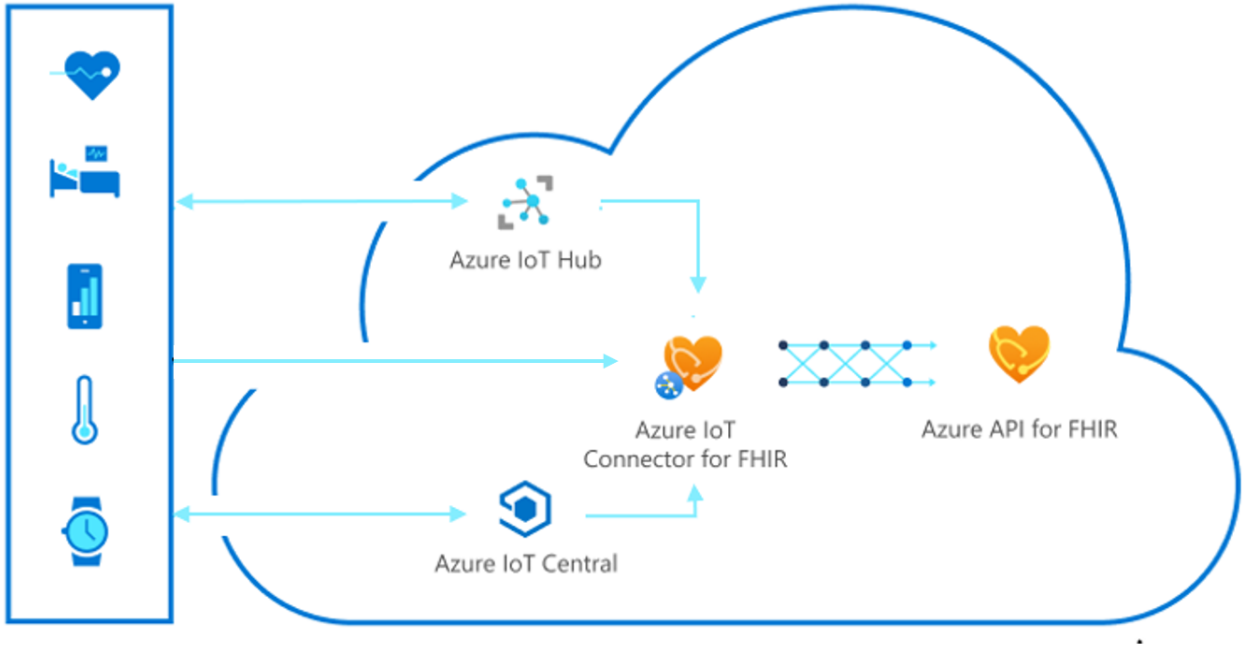
Azure IoT Connector for FHIR

Feature of Azure API for FHIR

End-to-end pipeline designed with security in mind to Ingest PHI data from IoT devices to FHIR

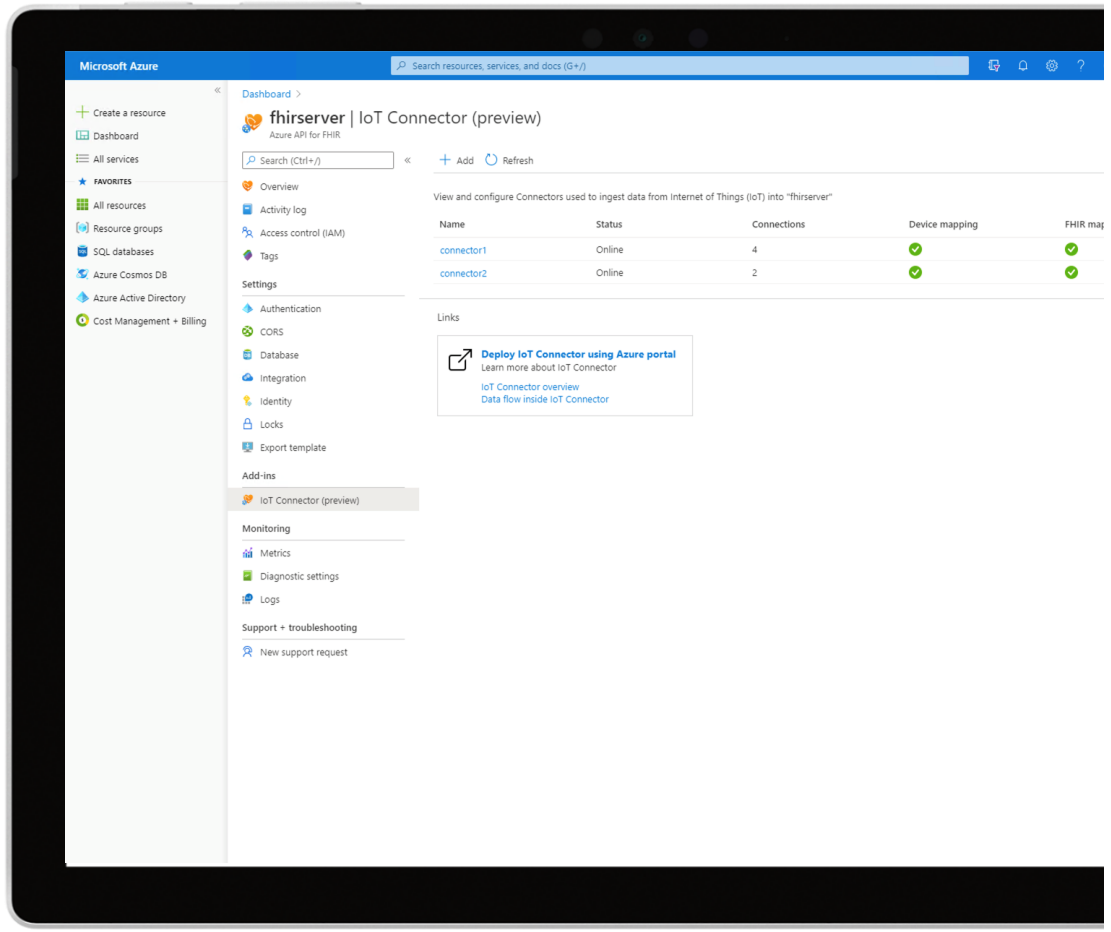
Seamless integration with Azure IoT

Scalable and Easy to use



Azure IoT Connector for FHIR - Features

- Managed feature of Azure API for FHIR
- Designed to help meet Security and Compliance requirements
- Normalize device data
- Convert to FHIR Observations
- Support for sub second
- Scalable with new workloads
- Seamless connection with Azure IoT
- Available in 11 Regions



Key Benefits

Azure covers 91 compliance offerings

The deepest and most comprehensive compliance coverage in the industry

Global

- ISO 27001:2013
- ISO 27017:2015
- ISO 27018:2014
- ISO 22301:2012
- ISO 9001:2015
- ISO 20000-1:2011
- SOC 1 Type 2
- SOC 2 Type 2
- SOC 3
- CIS Benchmark
- CSA STAR Certification
- CSA STAR Attestation
- CSA STAR self-assessment
- WCAG 2.0 (ISO 40500:2012)

US Gov

- FedRAMP high
- FedRAMP moderate
- EAR
- ITAR
- DoD DISA SRG Level 5
- DoD DISA SRG Level 4
- DoD DISA SRG Level 2
- DFARS
- DoE 10 CFR Part 810
- NIST SP 800-171
- NIST CSF
- Section 508 VPATs
- FIPS 140-2
- CJIS
- IRS 1075
- CNSSI 1253

Industry

- PCI DSS Level 1
- GLBA (US)
- FFIEC (US)
- Shared assessments (US)
- SEC 17a-4 (US)
- CFTC 1.31 (US)
- FINRA 4511 (US)
- SOX (US)
- 23 NYCRR 500 (US)
- OSFI (Canada)
- FCA + PRA (UK)
- APRA (Australia)
- FINMA (Switzerland)
- FSA (Denmark)
- RBI + IRDAI (India)
- MAS + ABS (Singapore)
- NBB + FSMA (Belgium)
- AFM + DNB (Netherlands)
- AMF + ACPR (France)
- KNF (Poland)
- European Banking Authority (EBA)
- FISC (Japan)
- HIPAA BAA (US)
- HITRUST certification
- GxP (FDA 21 CFR Part 11)
- MARS-E (US)
- NHS IG Toolkit (UK)
- NEN 7510:2011 (Netherlands)
- FERPA (US)
- CDSA
- MPAA (US)
- FACT (UK)
- DPP (UK)
- TISAX (Germany)

Regional

- Argentina PDPA
- Australia IRAP Unclassified
- Australia IRAP PROTECTED
- Canada Privacy Laws
- China GB 18030:2005
- China DJCP (MLPS) Level 3
- China TRUCS/CCCPPF
- EU EN 301 549
- EU ENISA IAF
- EU model clauses
- EU—US privacy shield
- GDPR
- Germany C5
- Germany IT—Grundschutz workbook
- India MeitY
- Japan CS mark gold
- Japan my number act
- Netherlands BIR 2012
- New Zealand Gov CIO Framework
- Singapore MTCS Level 3
- Spain ENS High
- Spain DPA
- UK cyber essentials plus
- UK G-Cloud
- UK PASF
- Korea K-ISMS
- France HDS

Blue indicates compliance offering for Azure API for FHIR and Azure IoT Connector for FHIR

https://aka.ms/AzureCompliance

IoMT – Open Source and PaaS Options

IoMT FHIR Connector for Azure

- Open source available @GitHub
- Full Control over the code and can be easily extended to support new features (like FHIR STU3 support)
- Designed for security and compliance

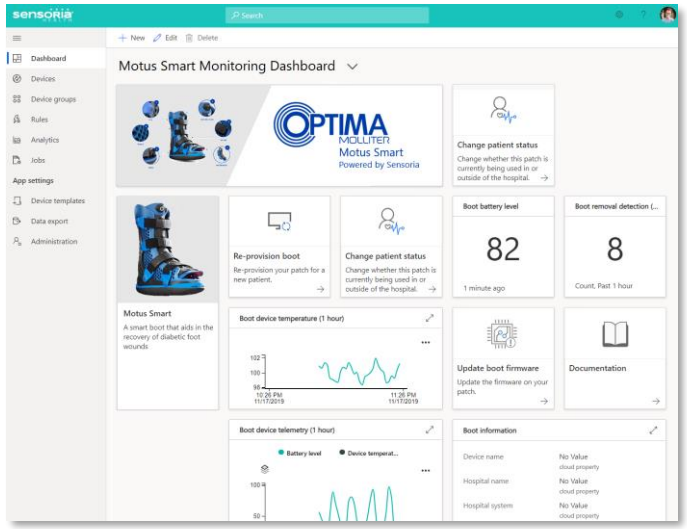
Azure IoT Connector for FHIR

- Managed feature of Azure API for FHIR (PaaS)
- Designed to help meet security and compliance requirements for PHI data ingestion
- Scalable and Easy to use

Sensoria Internet of Me Health Platform

Motus Smart

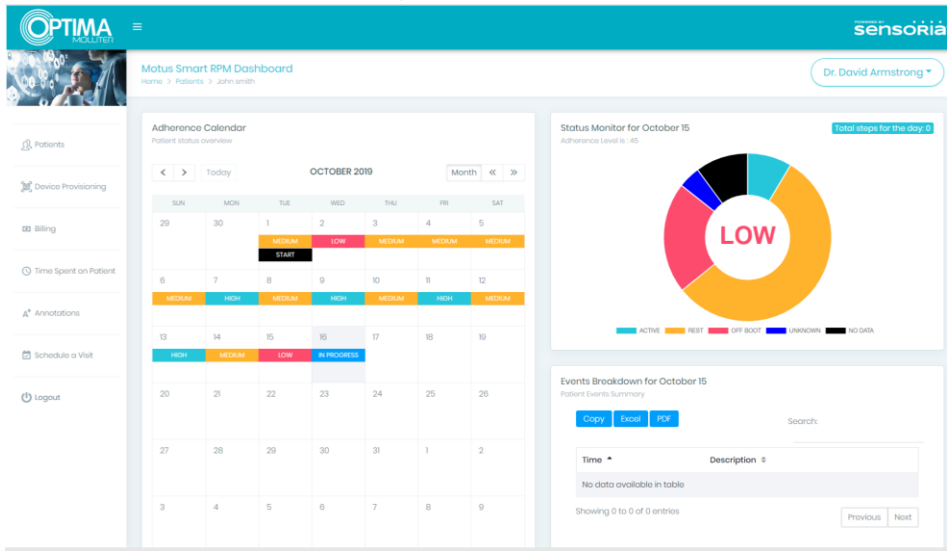
Motus Smart
Patient Mobile App



Sensoria Health Internet of Me
Motus Smart Monitoring Dashboard
built with Azure IoT Central

IoMT FHIR Connector

Azure API
for FHIR

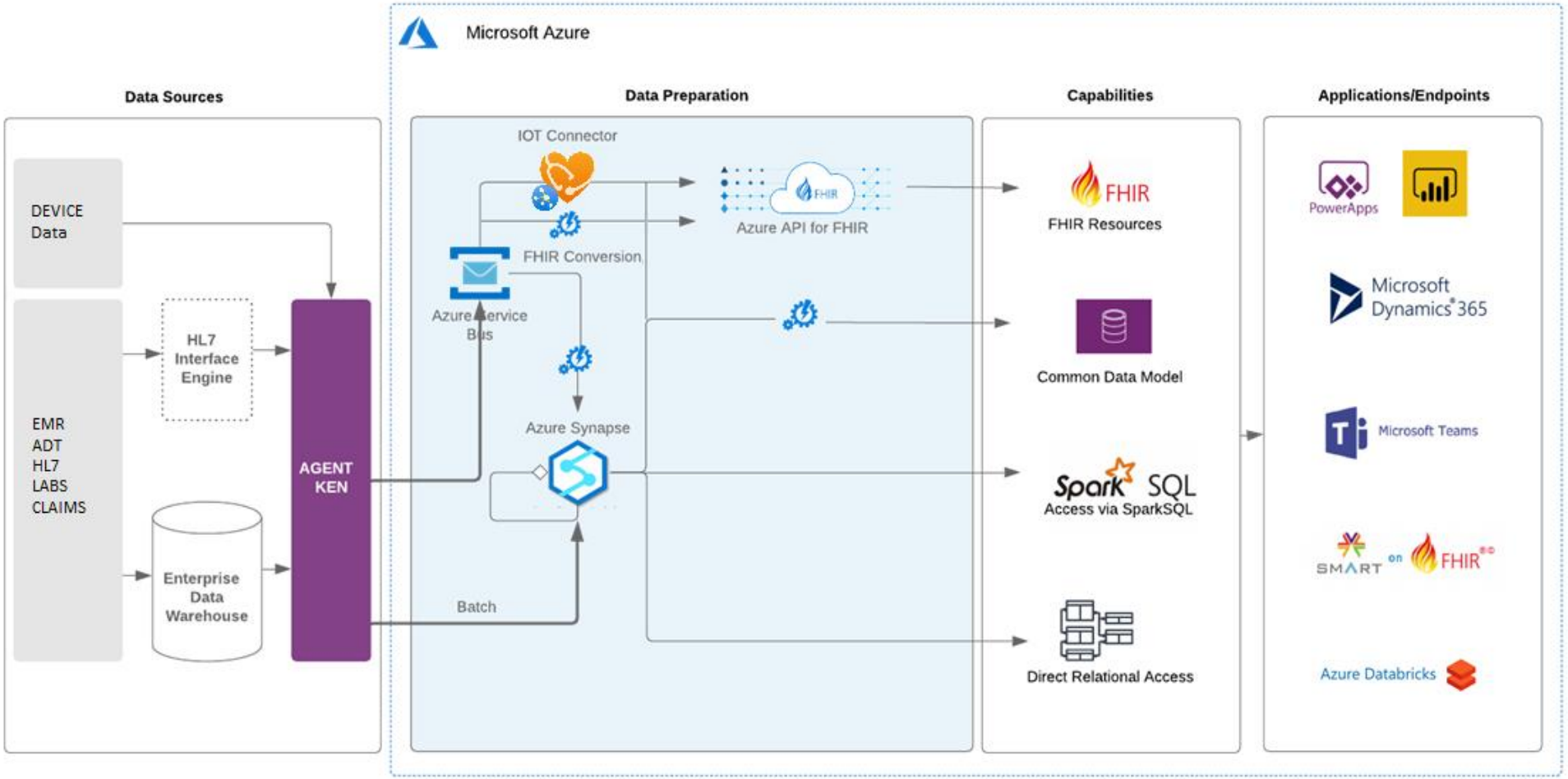


Provider Dashboard
powered by sensoria

Partner Story - KenSci

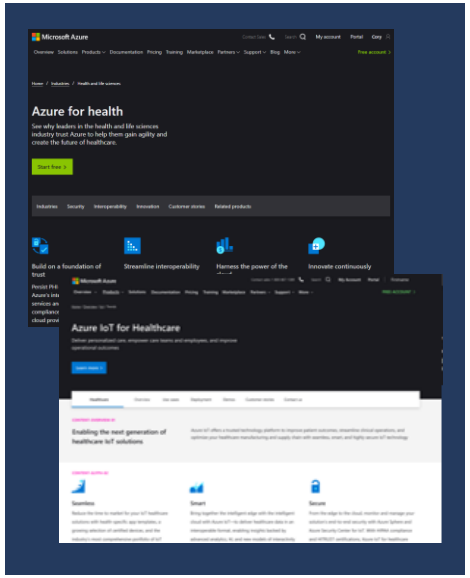
KenSci Connected Care Platform

Data and AI pipeline for Healthcare. Moves Data from Legacy source to Azure.
Converts to FHIR and CDM. And Enables ML development and production.



IoT in Healthcare Resources

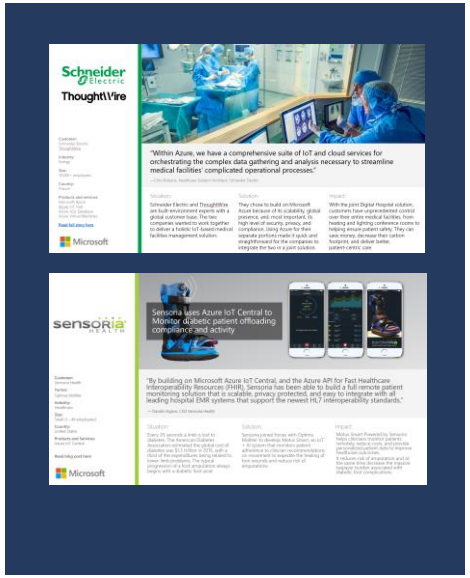
Azure Health and Azure IoT in Healthcare Websites



https://azure.microsoft.com/en-us/industries/healthcare/

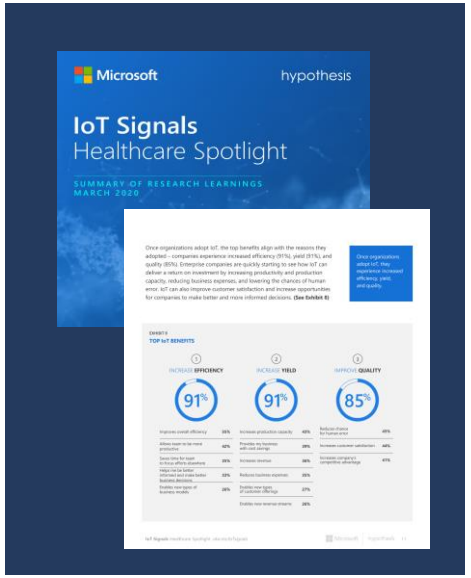
aka.ms/IoTHealth

Customer Stories



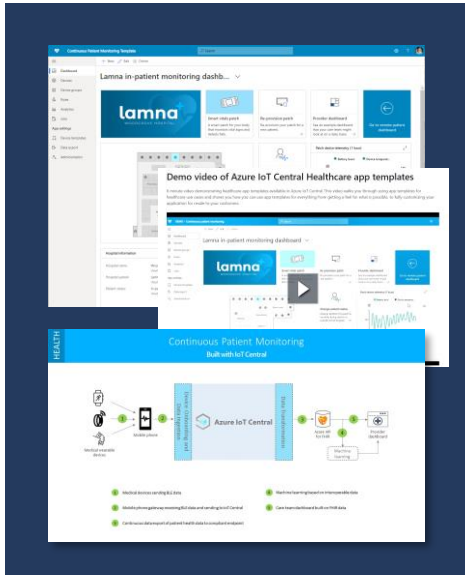
https://customers.microsoft.com/en-us/story/779843-rancho-los-amigos-health-provider-azure

IoT Research Signals Health Spotlight



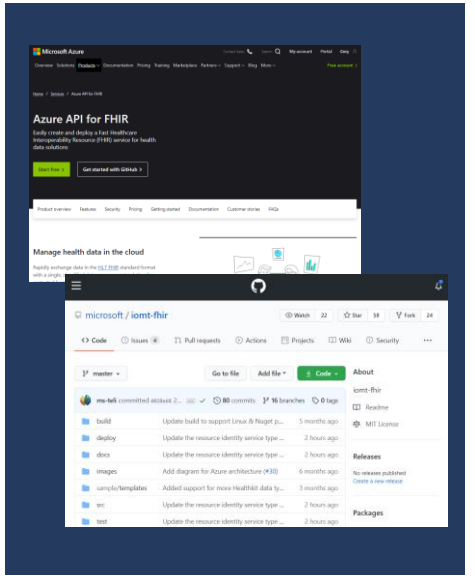
aka.ms/IoTResearchHealth

Continuous Patient Monitoring App Template for IoT Central



aka.ms/IoTCHealthTemplates
&
aka.ms/HealthTutorial

Azure API for FHIR & IoMT FHIR Connector in Github



Azure API for FHIR
IoMT FHIR Connector for Azure (github)
HealthKit on FHIR (github)