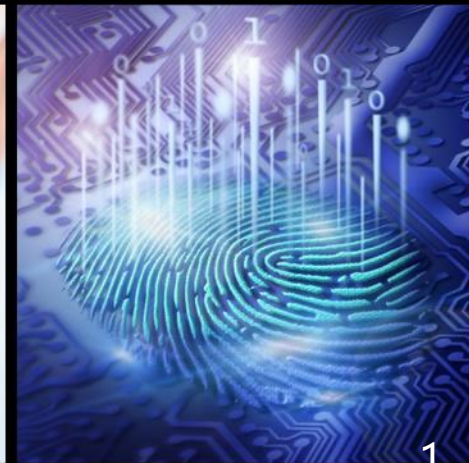
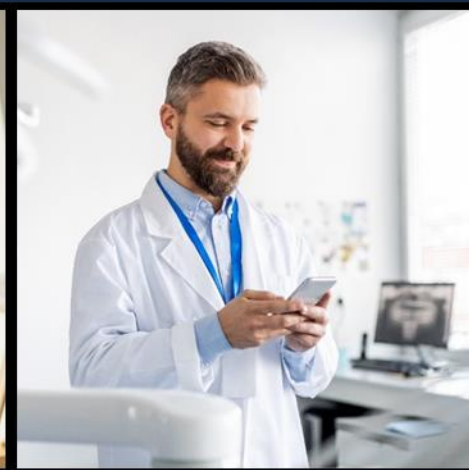


Microsoft Cloud for Healthcare



Today's Discussion

- Microsoft Cloud for Healthcare : Overview
- Microsoft Cloud for Healthcare – Business Outcomes
- Microsoft Cloud for Healthcare – Potential Opportunity/Use Cases
- Microsoft Cloud for Healthcare – Capabilities/Features/Demos
- Resources/Next Steps

Microsoft Cloud for Healthcare - The basics

What is Cloud for Healthcare

- It is bringing together capabilities from Microsoft Azure, Dynamics 365, Microsoft Power Platform, and Microsoft 365 healthcare industry specific scenarios.
- A layer on top of our existing horizontal clouds for the healthcare industry specificity
- Makes healthcare data and applications secure, compliant, connected & interoperable across the entire care continuum
- A platform to build, integrate, enable or extend solutions to address the challenges the healthcare industry
- GA Oct 2020

What it is not

a separate infrastructure or sovereign cloud

Why do we care

- Provides faster time to market for future healthcare services (Drives Cosell and Scorecard)
- Helps healthcare organizations to better collaborate
- Builds a cohesive healthcare ecosystem

Microsoft Cloud for Healthcare

Providing trusted and integrated cloud capabilities to deliver better experiences, better insights, and better care



Enhance patient engagement & experience



Empower health team collaboration



Improve clinical and operational insights



Enhance clinician experiences

From our customers

"We are lousy at connecting."
"We are forcing ourselves to see the patient as a person; and release to them a new experience."

"Our talent is overburdened and in need of advocacy."
"In an ecosystem where demand is greater than the supply, help us do human at scale."

"Having all the data doesn't always equate to insight."
"Patient reported outcomes and biomarkers will become additional vital signs."

"We want to reduce time spent on documenting patient encounters."
"We want to alleviate provider burnout with AI powered solutions"



Protect health information

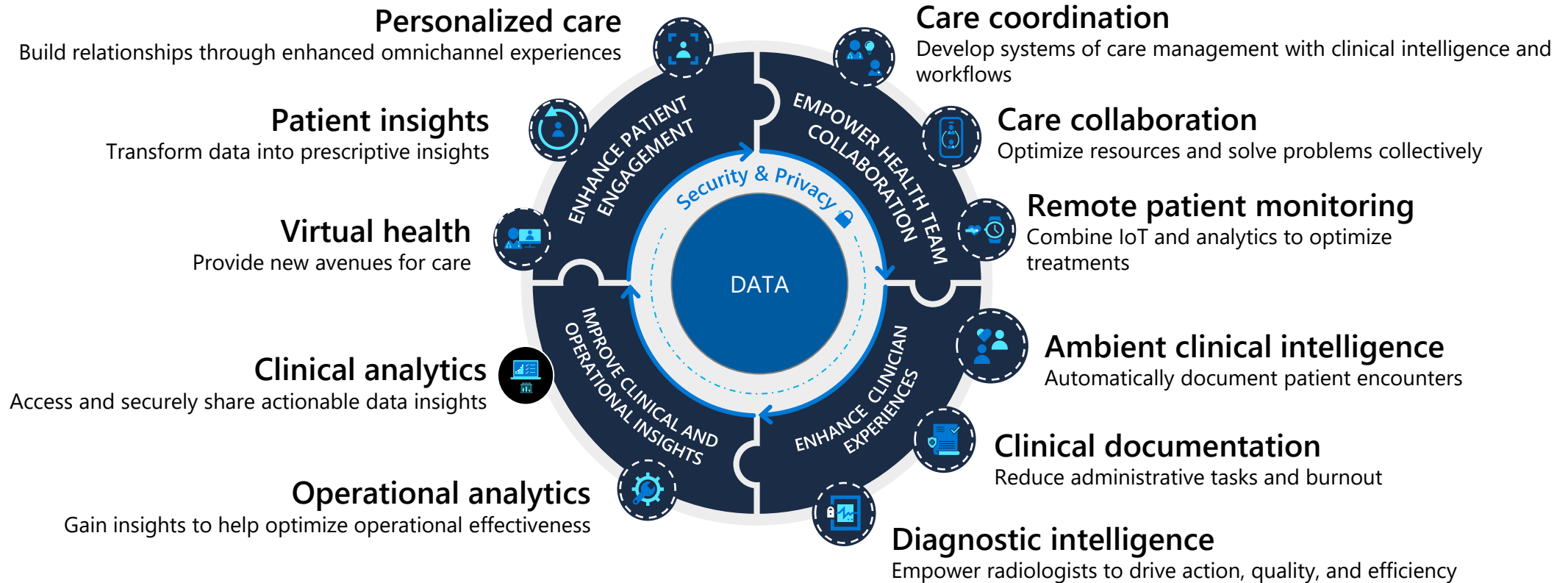
"Cybercrime is up. We must meet it with greater control and resilience in our investments."



Interoperability of health data

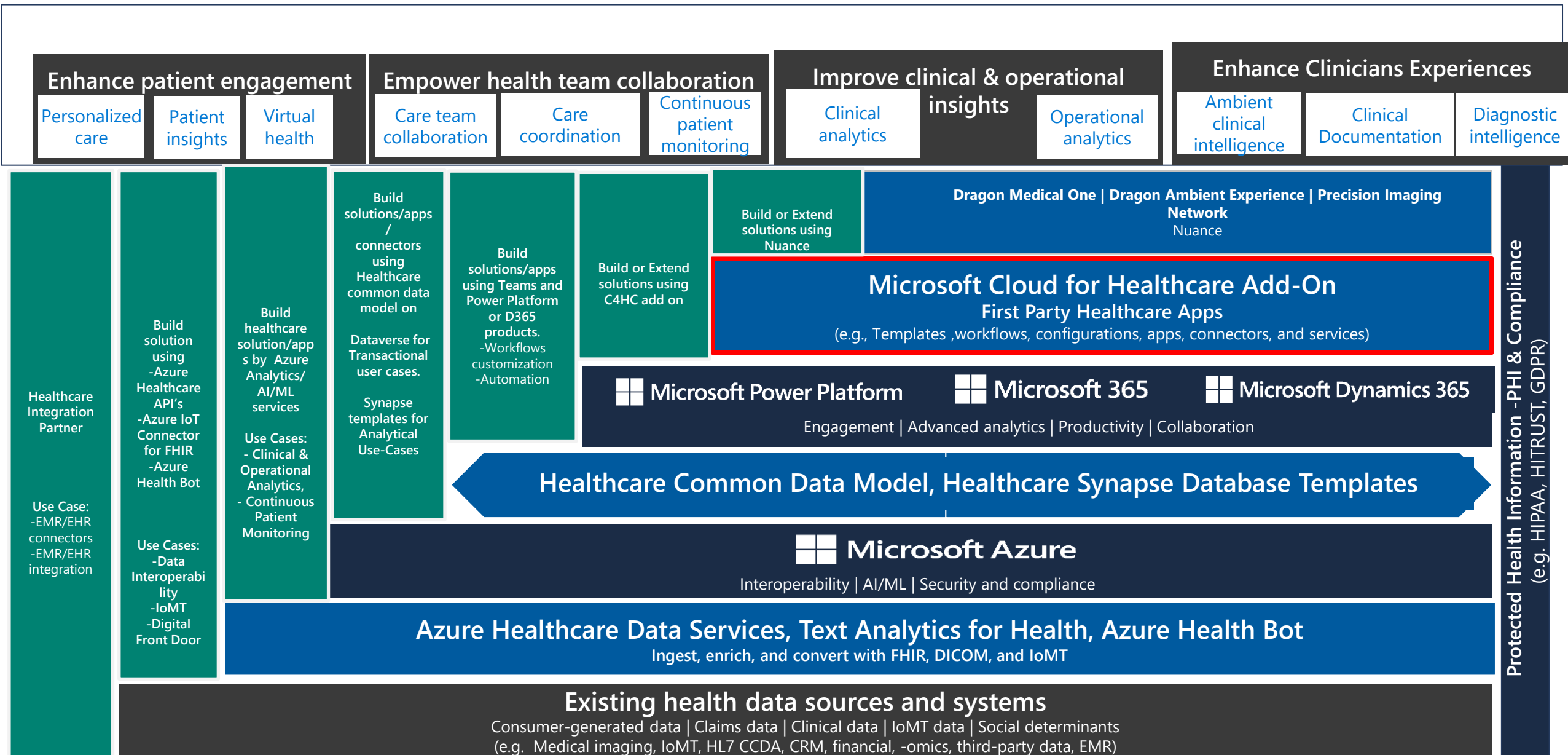
Microsoft Cloud for Healthcare

Capabilities enabling better experiences, better insights, better care

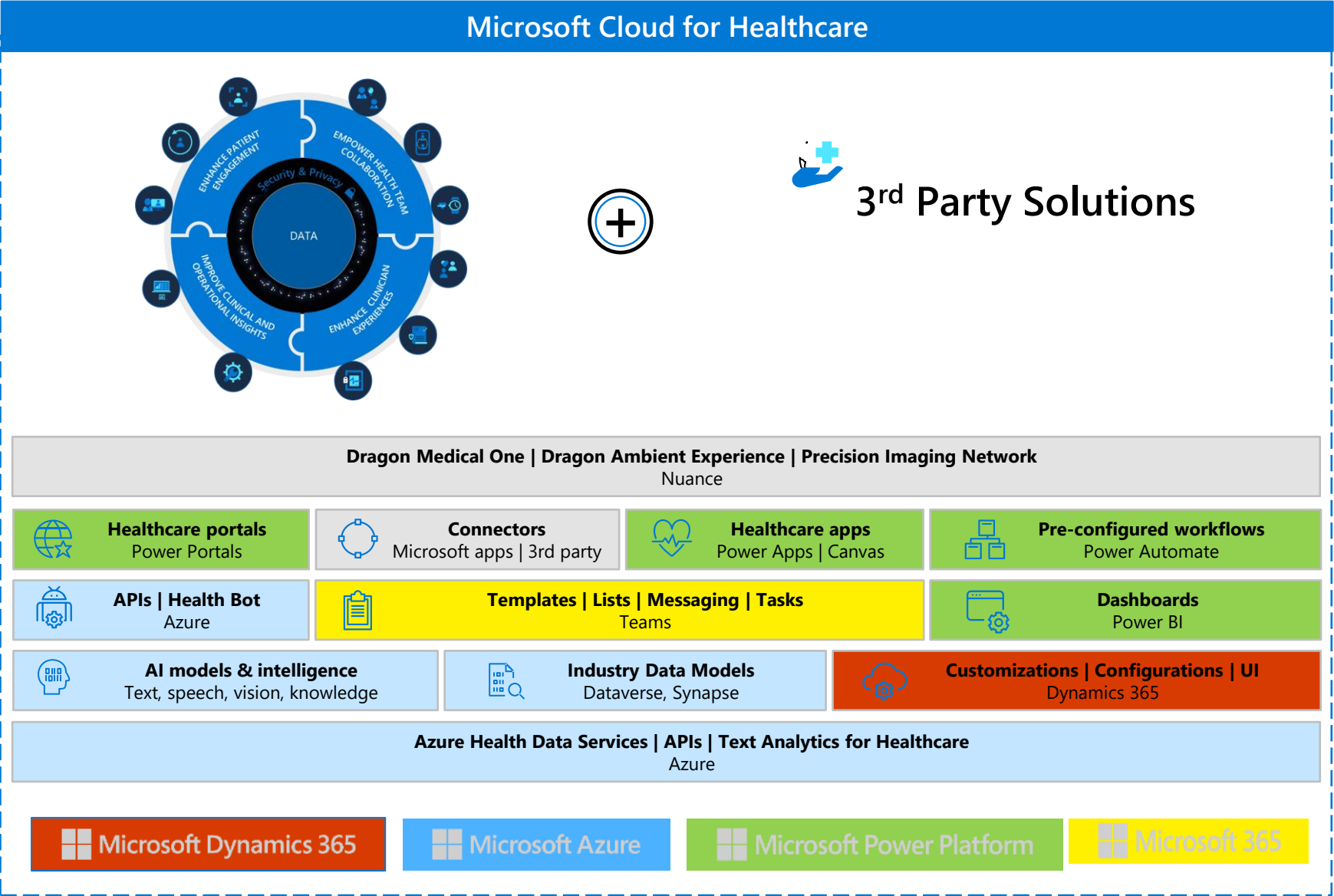
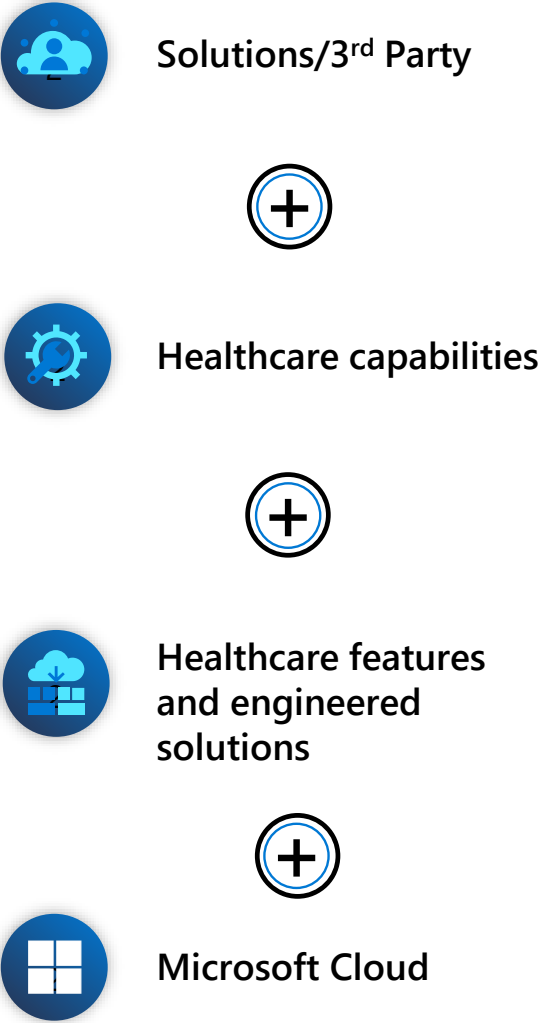


Microsoft Cloud

Microsoft Cloud for Healthcare – Partner Opportunity/Partnertecture



How Microsoft Cloud for Healthcare comes to life



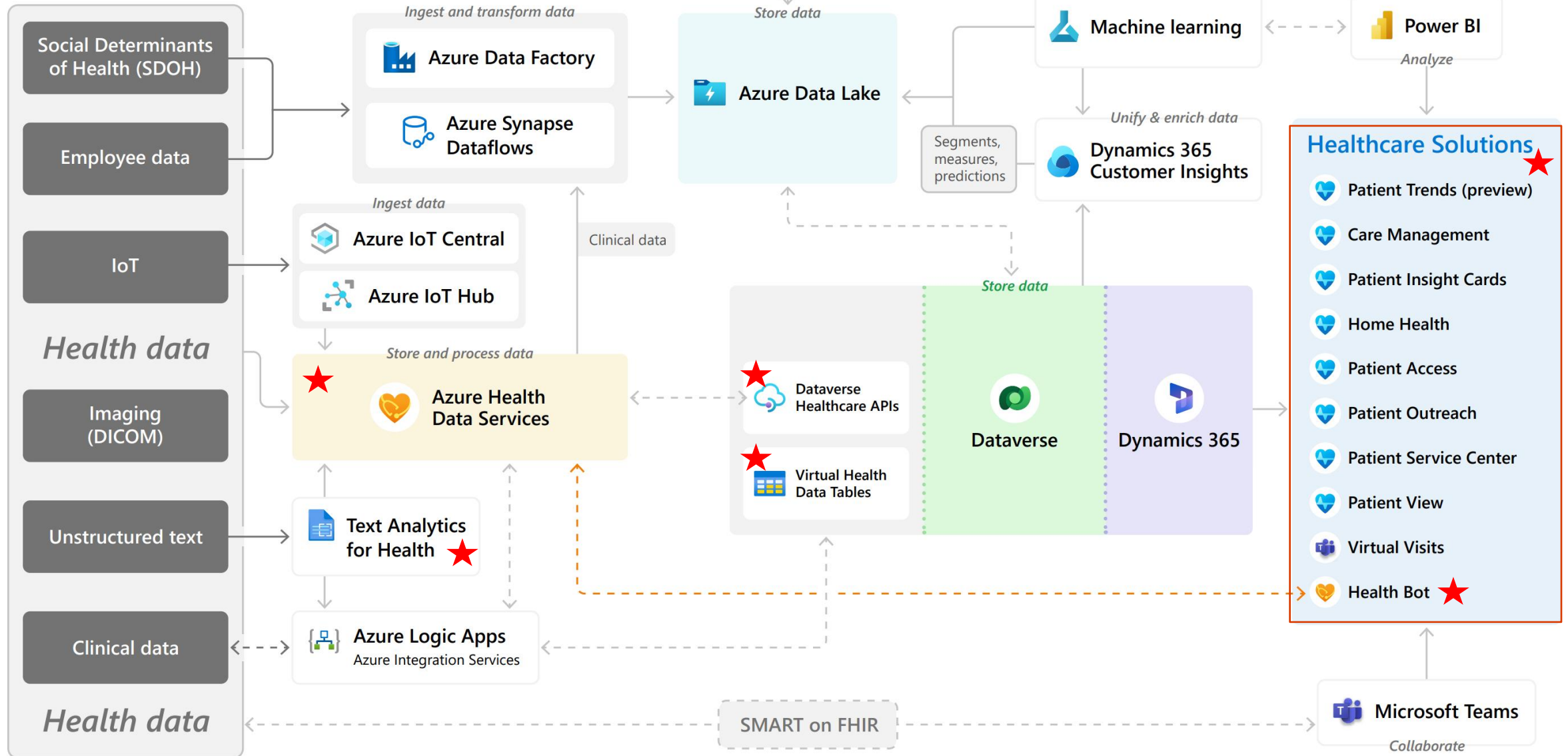
Microsoft Cloud for Healthcare | Pre-requisites licensing map

Industry Priority Scenario (IPS)	Capability	Solutions/ Building Blocks	C4HC Add-On	Microsoft 365			Power Platform			Microsoft Dynamics 365								Microsoft Azure			
				Microsoft Teams	Bookings	EHR Connector	Power Apps	Power Automate	Power BI	Marketing	Customer Insights	Customer Service (Enterprise)	Digital Messaging add-on	Field Service	Resource Scheduling add-on	Sales Enterprise	Sales Insights add-on	Azure Health Data Services	Azure Health Bot	Text Analytics for Health	IoT Hub
Enhance patient engagement	Personalized care	Patient service center	●	◆			Included in D365 Customer Service		◆			●	●					●	●		
		Patient outreach	●	◆			●	Included in Power Apps		●	◆							●			
		Patient access	●	◆			●	Included in Power Apps				●						●	●		
	Patient insights	Patient 360 view	●	◆			●	Included in Power Apps	◆									●		◆	
		Health assistant	●				Included in D365 Sales		◆							●	●				
	Virtual health	Virtual clinic	●	●	◆		●	Included in Power Apps	◆									◆			
		Virtual visits		●	◆	◆												●	◆		
Empower health team collaboration	Care coordination	Home health manager	●	◆			Included in D365 Field Service		◆					●	●			◆			
		Care management	●	◆			●	Included in Power Apps	◆			●						●	◆	◆	
	Remote patient monitoring	Remote patient monitoring		◆			◆	◆	◆									●	◆		●
	Care team collaboration	Care team collaboration		●														●			
Improve clinical and operational insights	Interoperability	Interoperability																●		◆	
	Operational analytics	Operational analytics		◆			●	Included in Power Apps	●									●		●	◆
	Clinical analytics	Clinical analytics		◆			●	Included in Power Apps	●									●		●	◆

Microsoft Cloud for Healthcare








End-to-end workloads with FHIR based PHI store

FHIR: Fast Healthcare Interoperability Resources DICOM: Digital Imaging and Communications in Medicine
PHI: Protected Health Information



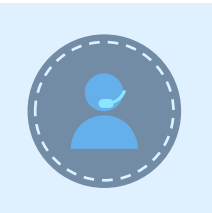
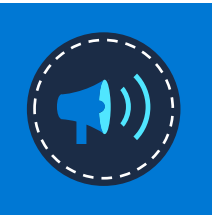
Enhance patient engagement

Develop personalized experiences and interactions that empower patients to take more control over their health.

Scenario	Capabilities	Features
Enhance patient engagement	<div><div>Personalized Care</div></div>	<div><div>Patient Outreach</div></div>
	<div><div>Patient Insights</div></div>	<div><div>Patient Access</div></div>
	<div><div>Virtual Health</div></div>	<div><div>Patient Service Center</div></div> <div><div>Azure Health Bot</div></div>

Patient Outreach

Streamline and tailor patient outreach leveraging pre-built segments and healthcare-specific event templates.



Feature Functionality

Patient Experiences

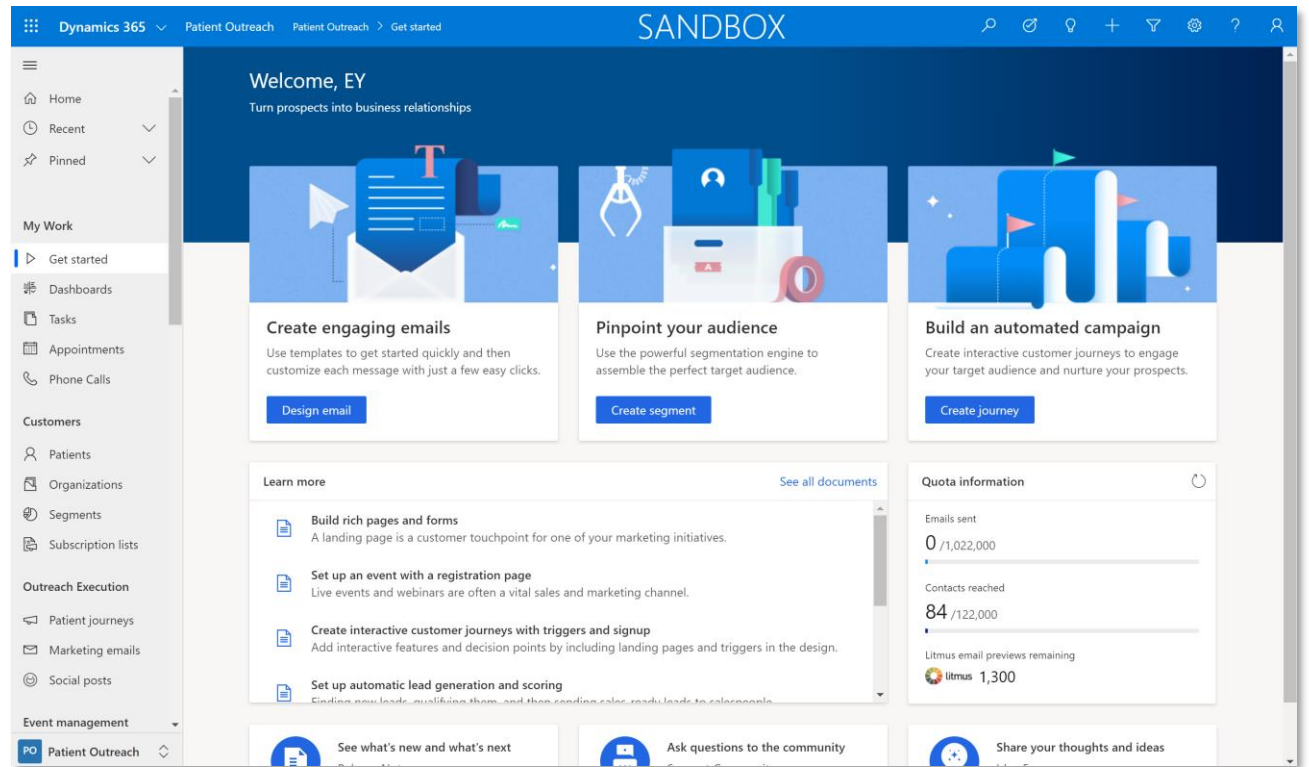
Patient Insights

Patient Segmentation

Patient Journey Automation

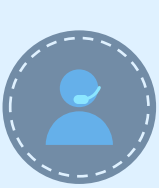
Patient Campaign Management

Event Management



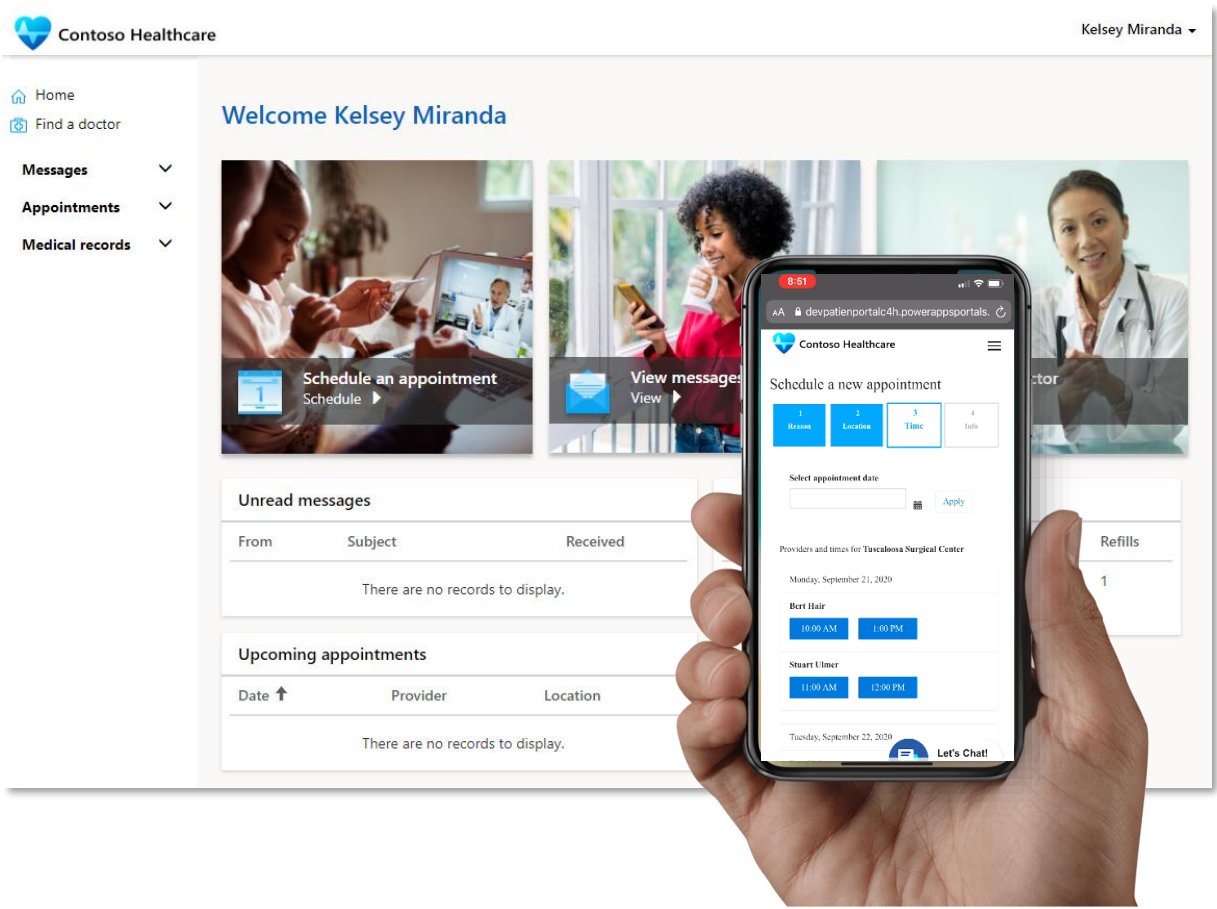
Patient Access

Give patients omnichannel access to services like scheduling, messaging, and health bot via an intuitive patient portal.



Feature Functionality

- Patient Portal
- Access to Medical Records
- Patient Self-Scheduling
- Secure Patient Messaging
- Patient Triage with Health Bot
- Physicians Directory



Patient Service Center

Engage effectively with patients using built-in guidance while managing interactions and communications.

Feature Functionality

Conduct Patient Conversations

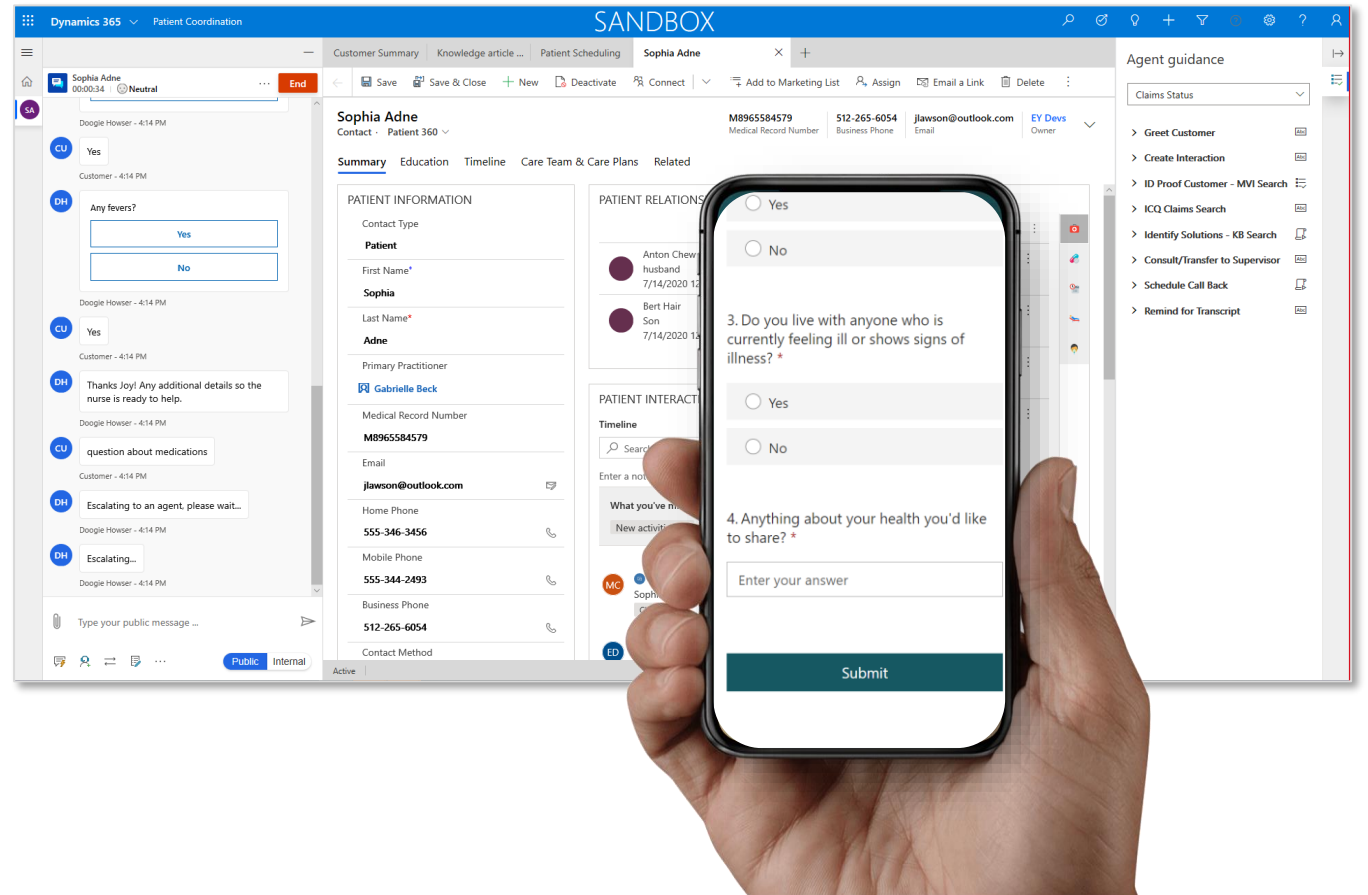
Get Patient 360 Information

Agent Scripts with Smart Assist

Knowledge Article Coaching

Monitor Sentiment Analysis

Patient Satisfaction Survey



Azure Health Bot

Provide a self-service engagement channel by building chatbots from templates with built-in and custom scenarios.

Feature Functionality

Built-in Conversations

Scenario Templates

Custom Scenarios

Authored Cards

Language Model Extensibility

Escalate to Call Center

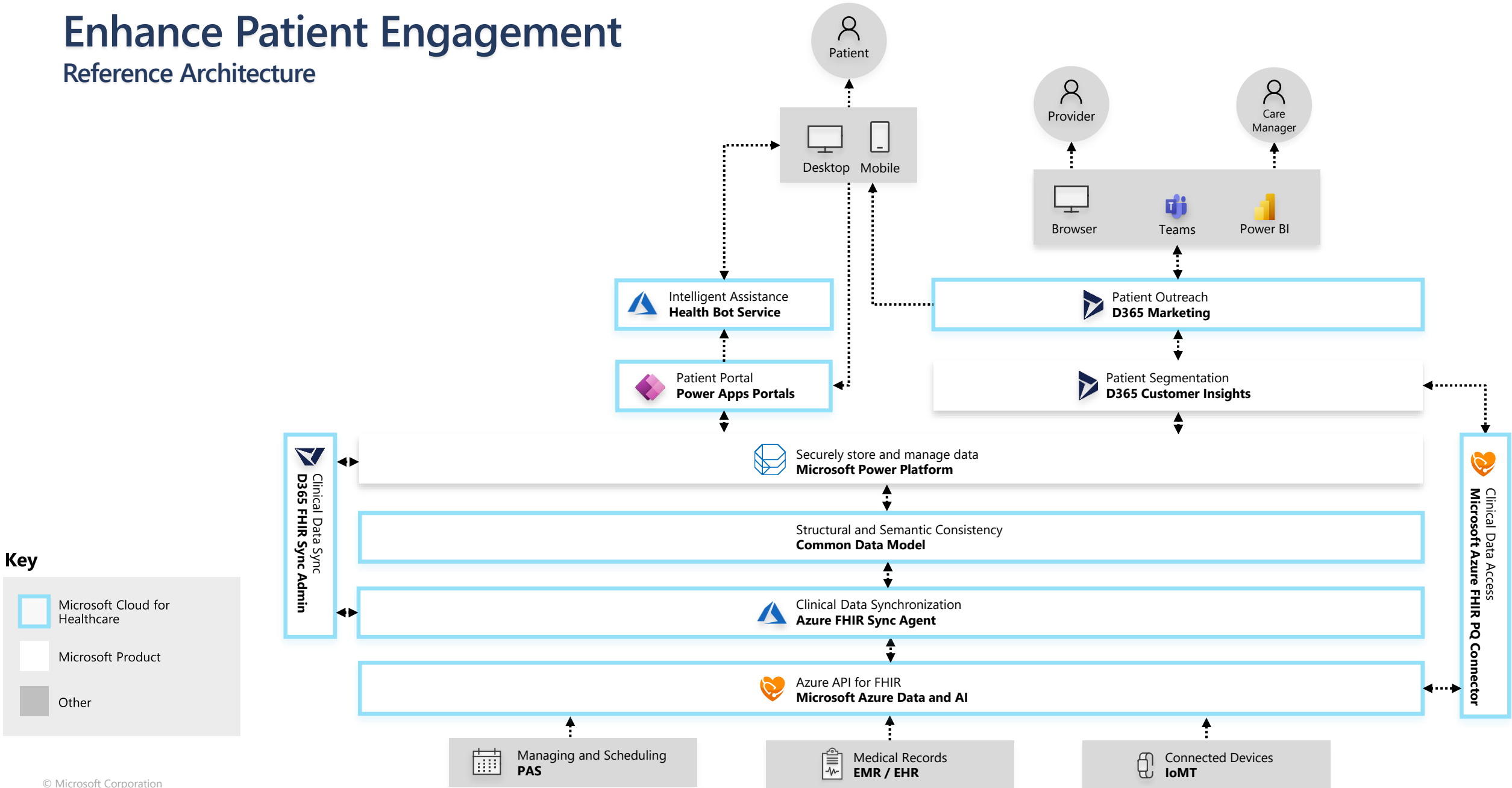
The screenshot displays the Health Bot Service interface. On the left, a sidebar menu includes options like Scenarios, Language, Models, Localization, Configuration, Integration, Analytics, Users, and Resources. The main panel is titled 'Language models' and lists various built-in scenarios with their corresponding intents and actions. A hand is holding a smartphone in the foreground, showing a chat interface with a Microsoft Health bot. The chat history includes a welcome message and a user's input about COPD. The bot's response includes a list of symptoms and a link to more resources.

Active	Model	Intent	Action
On	Medical information requests	ConditionInformation	/builtin/condition/information
On		ConditionSymptoms	/builtin/condition/symptoms
On		ConditionCauses	/builtin/condition/causes
On		ConditionComplications	/builtin/condition/complications
On		ConditionResources	/builtin/condition/resources
On		ConditionDoctorSpecialties	/builtin/condition/specialties
On	Medical complaints	Triage	/builtin/triage
On	Drugs and medications	DrugInformation	/medication/information
On	Greetings	greeting	/builtin/greeting
On	Help	help	/builtin/help
On	View terms	terms	/builtin/terms
On	Privacy queries	need_to_know	/builtin/need_to_know
On	View personal data	user_info	/builtin/user_info
On	Delete all data	forget_me	/builtin/forget_me
On	Feedback	feedback	/builtin/feedback
On	View conversation history	log	/builtin/log
On	Escalate	Escalate	Escalate

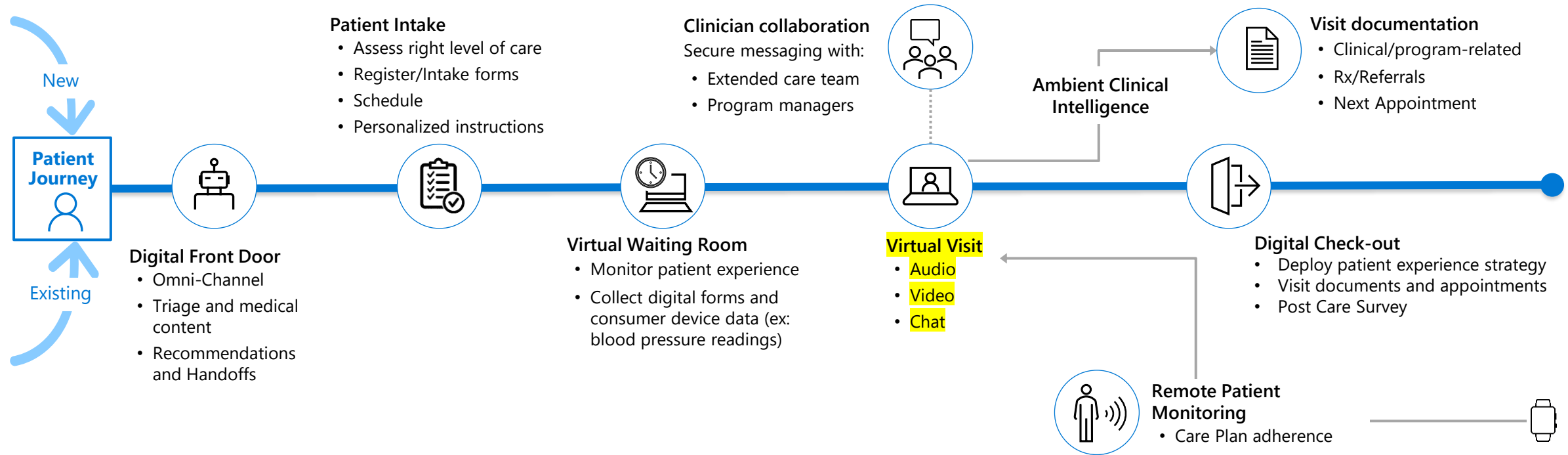


Enhance Patient Engagement

Reference Architecture



Health organizations want a more connected, data-driven and seamless virtual health experience for both patients and clinicians



Foundational

Clinical and Operational Analytics | Intelligence and insights

CRM – a unified platform for data, people and processes

Interoperability | FHIR

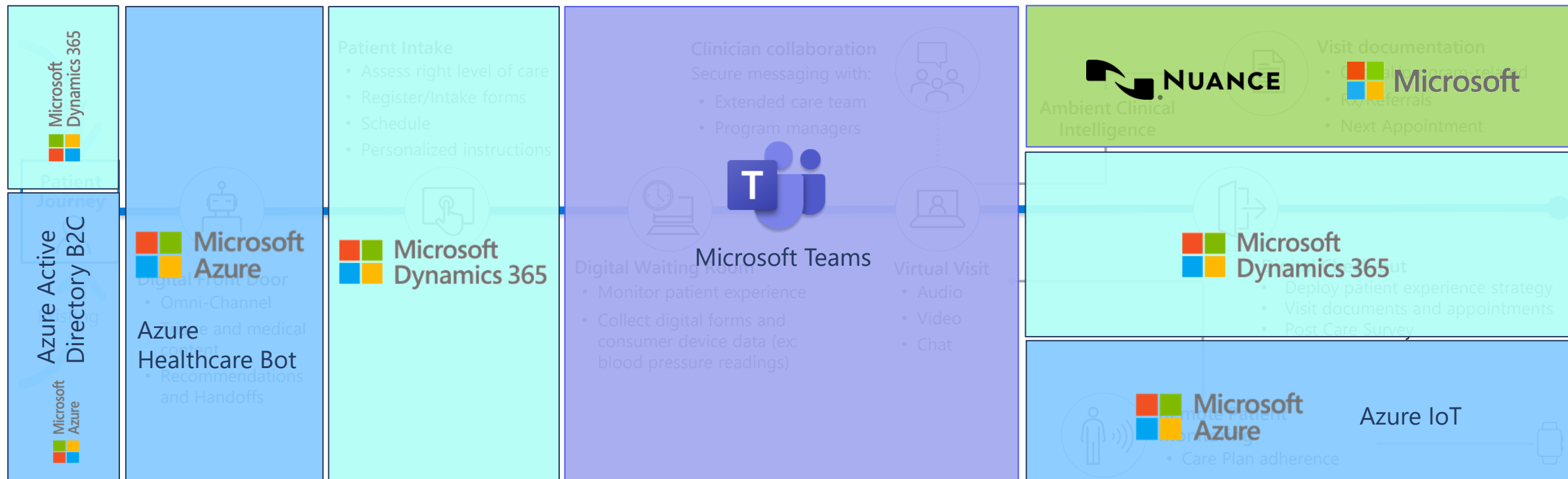
Your existing systems and data sources – EHR | Patient preferences | External data | Remote Patient Monitoring data | Social determinants

Security | Identity Management (enterprise and consumer)

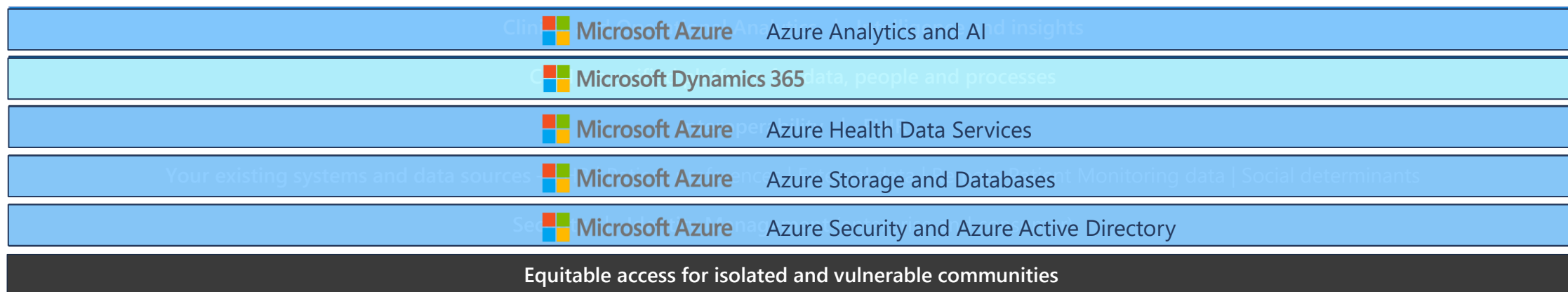
Equitable access for isolated and vulnerable communities

Foundational

Health organizations want a more connected, data-driven and seamless virtual health experience for both patients and clinicians










Foundational



Foundational

Empower health team collaboration

Accelerate health teams' ability to coordinate care in a secure environment and simplify complex workflow management.

Scenario	Capabilities	Features
Empower health team collaboration	<div><div>Care Team Collaboration</div></div>	<div><div>Care Management</div></div>
	<div><div>Care Coordination</div></div>	<div><div>Home Health</div></div>
	<div><div>Continuous Monitoring</div></div>	<div><div>Care Team Member</div></div> <div><div>Virtual Clinic</div></div>

Care Management

Manage Care Plans and Care Teams

Feature Functionality

Holistic Patient Information

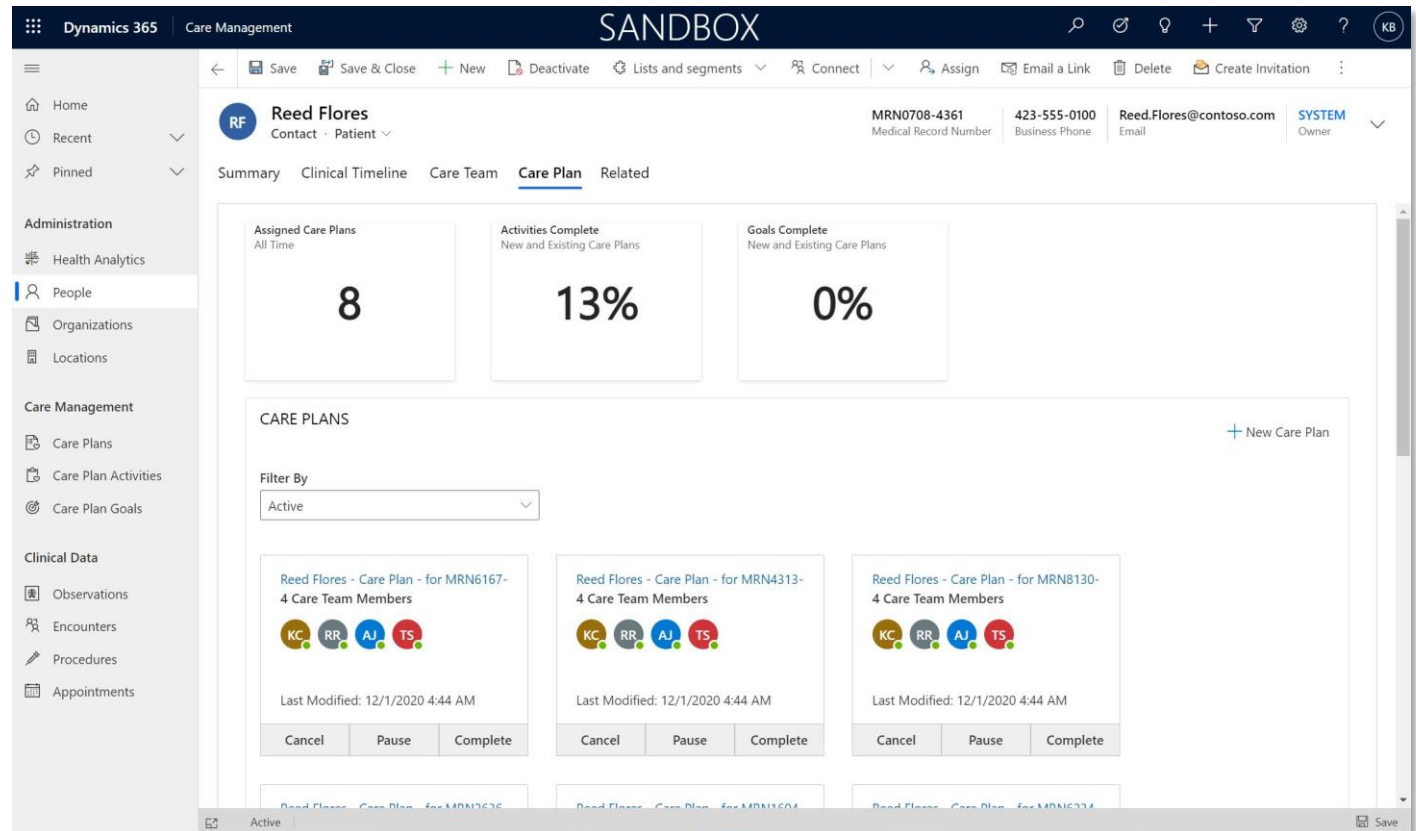
Care Plan Management

Care Team Management

Care Team Support

Patient Health Timeline

Health Analytics



Home Health

Streamline home care with resource management and route optimization tools.

Feature Functionality

Scheduled Home Visit

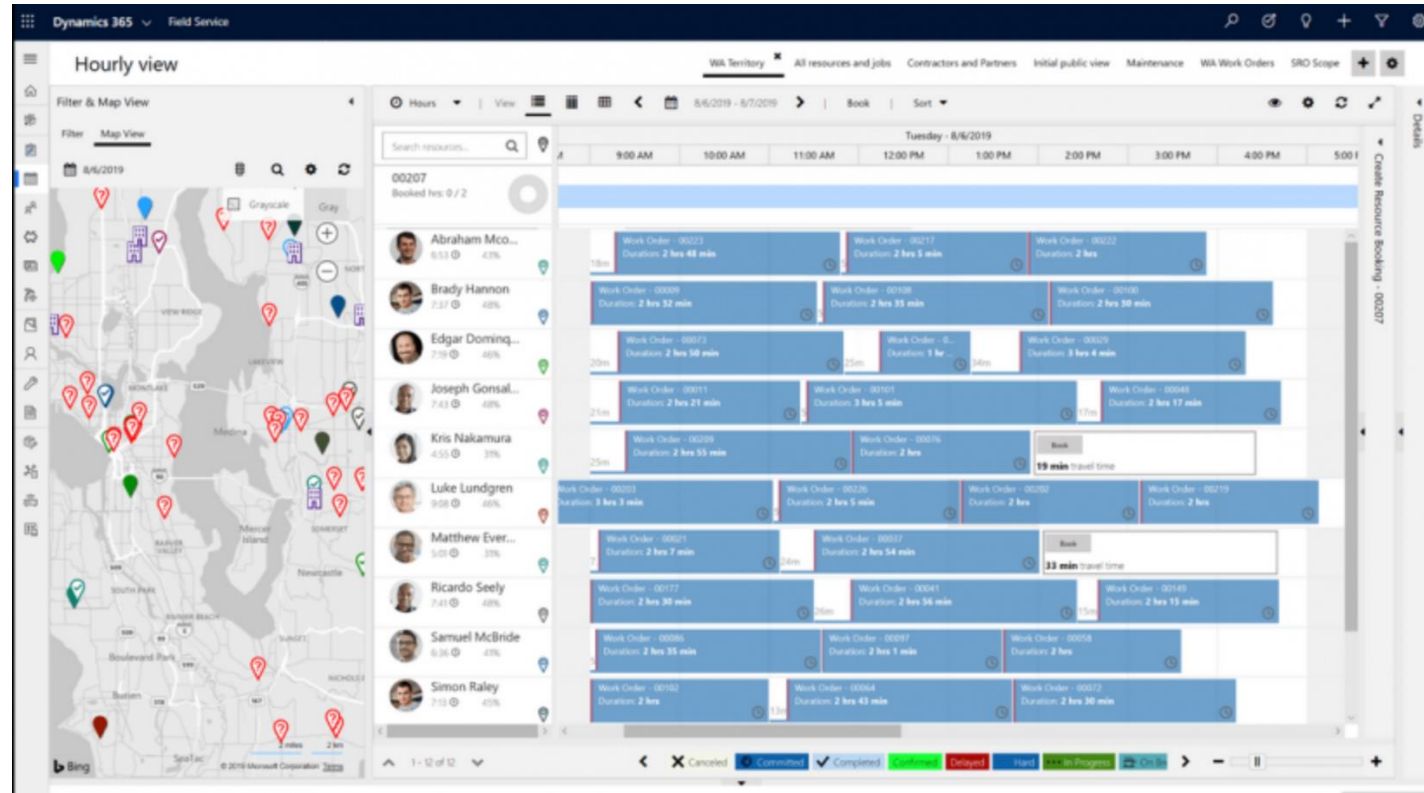
Home Patient Care

Home Care Management

Visit Tracking Notifications

Provider Schedule Management

Scheduling Optimization



Care Team Member

Care Team view that provides a complete picture of all people collaborating to provide the best care for the patient.



Feature Functionality

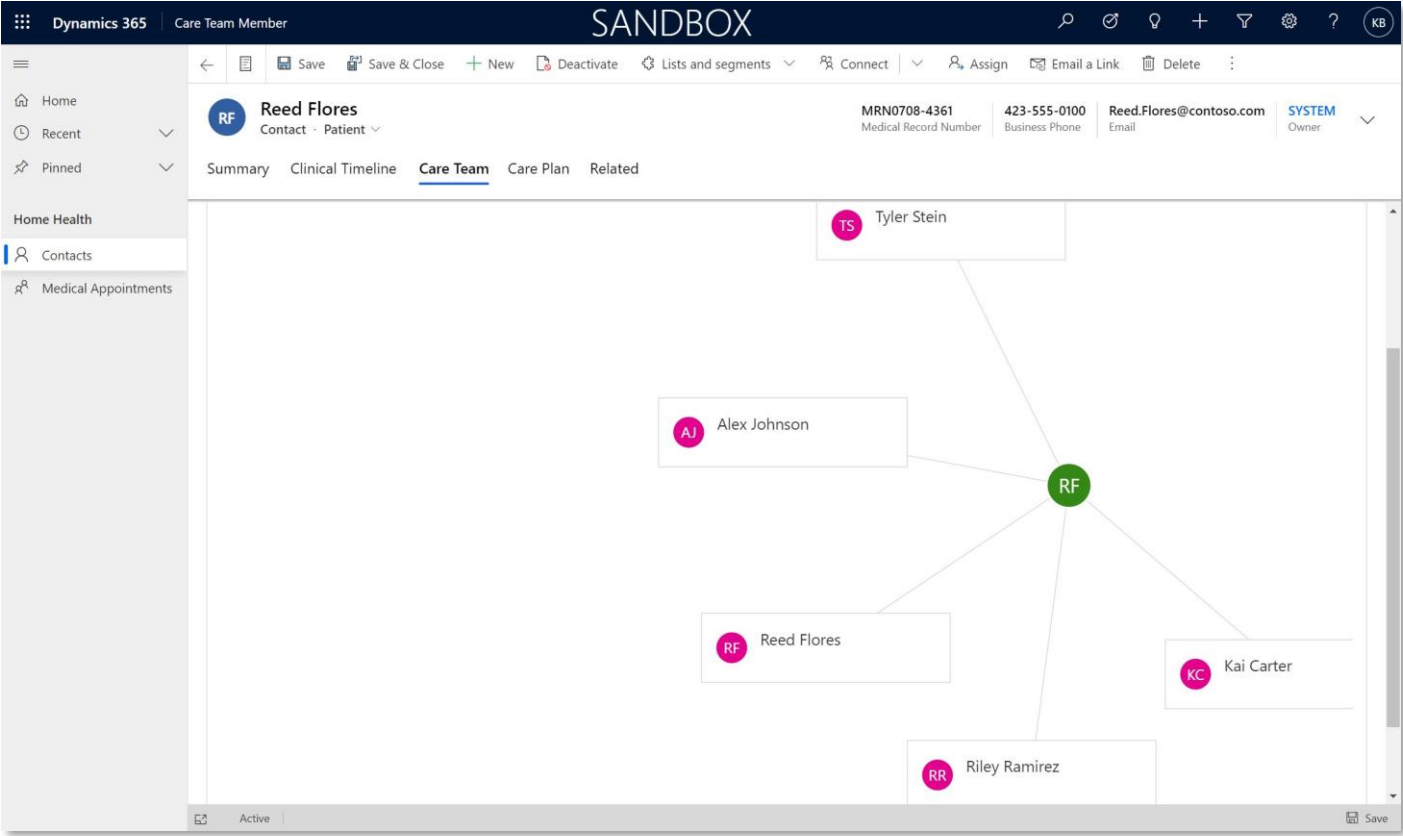
Holistic Patient Information

Home & Virtual Patient Care

Care Team Collaboration

Patient Health Timeline

Health Analytics



Virtual Visits

Utilize video conferencing to provide high-quality, personalized, and affordable consultations.

Feature Functionality

Scheduled/Instant Virtual Appts

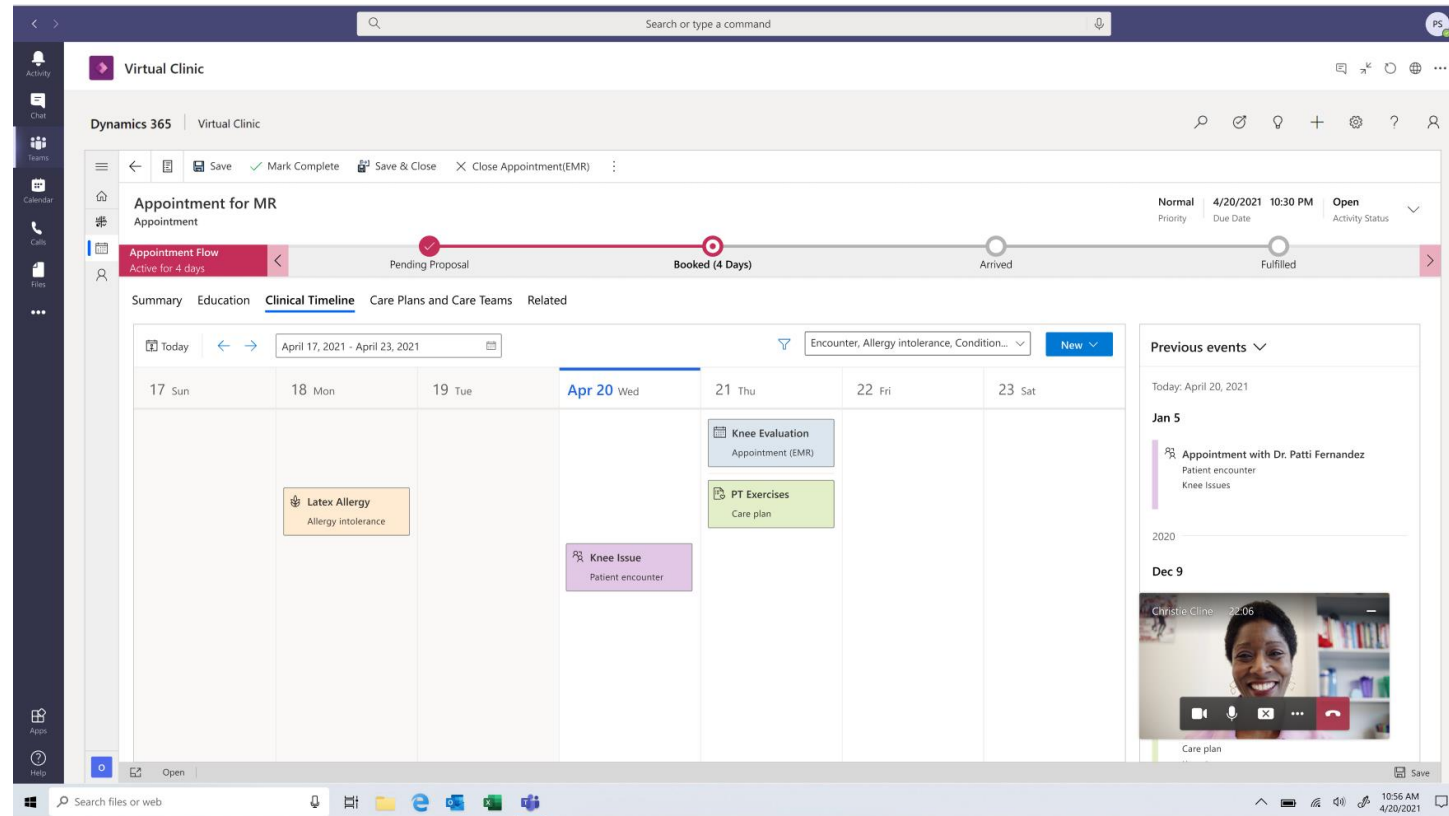
Virtual Clinic Dashboards

Video Calls via Microsoft Teams

Multiple Client Options

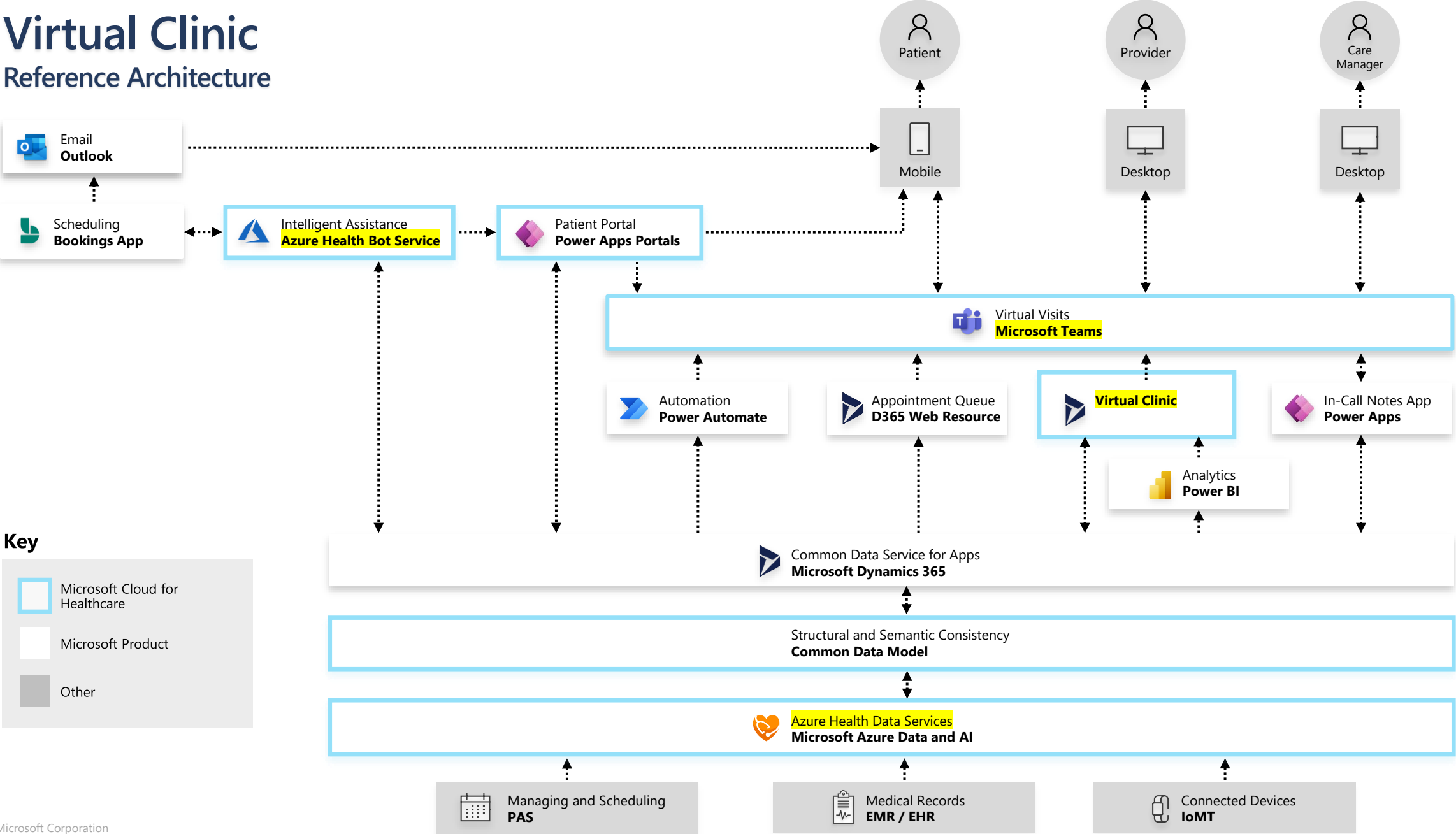
Embedded App Experience

Access Holistic Patient View









Virtual Clinic

Reference Architecture



Improve clinical and operational data insights

Connect data across systems, creating insights to predict risk and help improve patient care, quality assurance, and operational efficiencies.

Scenario	Capabilities	Features
Improve clinical and operational analytics	<div><div>Operational Analytics</div><div>Clinical Analytics</div></div>	<div><div>Dataverse</div><div>Azure Health Data Services</div><div>FHIR Sync Administration</div><div>Healthcare Administration</div></div>

Dataverse

Securely store and manage data that's used by Microsoft Cloud for Healthcare applications.



Feature Functionality

Securely Store & Manage Data

Build Apps Against your Data

Quickly Access your Data

Reusable Business Logic

Built-in Validations

Integration with Other Systems

Power Apps

Environment: HealthcareInADay_Test

HomeLearnAppsCreateDataTablesChoicesDataflowsExport to data lakeConnectionsCustom ConnectorsGatewaysFlowsChatbotsAI BuilderSolutions

New tableGet dataExport dataExport to data lakeAnalyze in Power BIAl Builder

Tables

Table	Name	Type	Customiza...
Account	account	Standard	✓
Activity	activitypointer	Custom	✓
Address	customeraddress	Standard	✓
Appointment	appointment	Standard	✓
Attachment	activymimeattachment	Standard	✓
Business Unit	businessunit	Standard	✓
Contact	contact	Standard	✓
Currency	transactioncurrency	Standard	✓
Email	email	Standard	✓
Email Template	template	Standard	✓
Fax	fax	Standard	✓
Feedback	feedback	Standard	✓
Knowledge Article	knowledgearticle	Standard	✓
Letter	letter	Standard	✓
Mailbox	mailbox	Standard	✓
Organization	organization	Custom	✓
Phone Call	phonecall	Standard	✓
Position	position	Standard	✓
Privilege	privilege	Custom	✓
Product	product	Standard	✓
Recurring Appointment	recurringappointmentmaster	Standard	✓



Azure Health Data Services

Rapidly exchange data and securely connect and interact with any system that utilizes FHIR APIs.

Feature Functionality

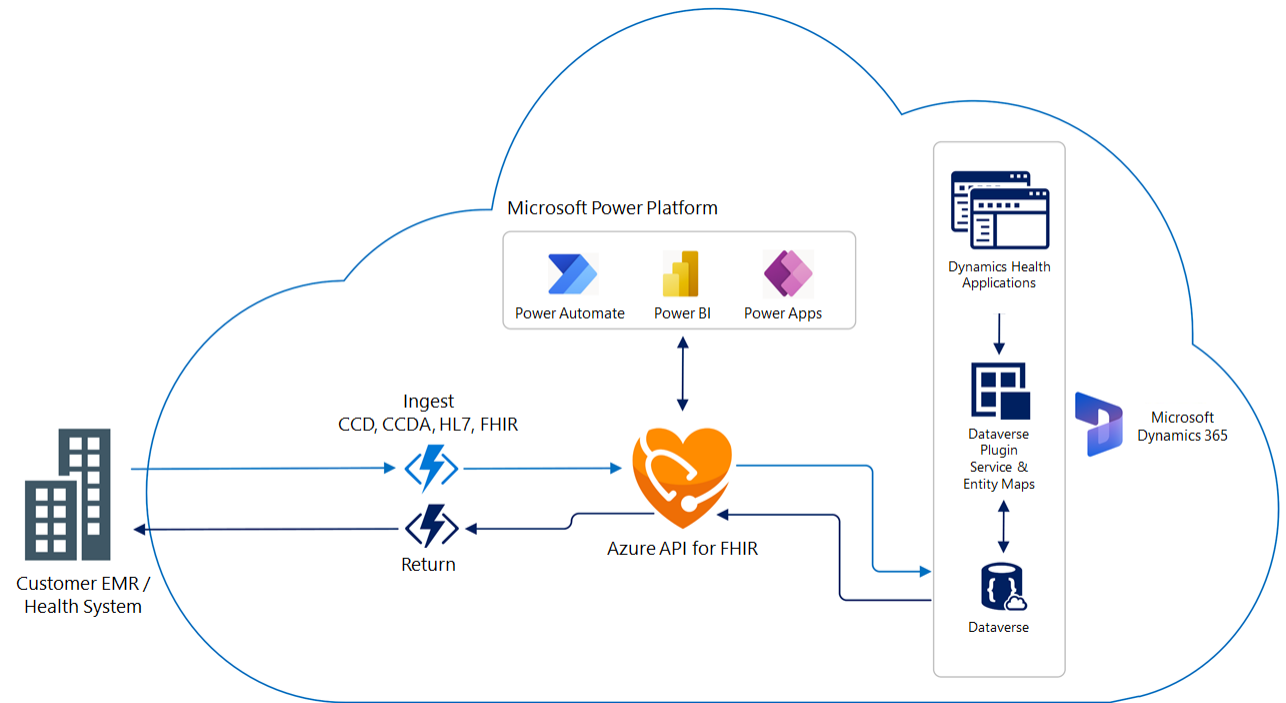
Rapidly Exchange Data

Holistic View of FHIR Data

Adapt and Extend Dataverse

Enrich Disparate Data Sets

End to End Data Pipeline



Manage your FHIR mappings, resources, and integration settings for Dataverse.

Manage your FHIR mappings, resources, and integration settings for Dataverse.



Configure Azure FHIR Resources

Configure Azure FHIR Resources

Create & Manage Entity Maps

Create & Manage Attribute Maps

Analyze FHIR Sync Data

Track FHIR Sync History

Manage Integration Settings

Dynamics 365

FHIR Sync Agent Administration

SANDBOX

Home

Recent

Pinned

Mappings

Entity Maps

Attribute Maps

Sync Agent Logs

Application Config

Azure FHIR Resources

Integration Settings

Show Chart

New

Delete

Refresh

Email a Link

Flow

Excel Templates

Export to Excel

Search this view

Active Update Service Entity Maps

Entity Name	Code (Azure FHIR Resource)	Supported Messages	Is Disabled	Enable Write Back to FHIR
msemr_encounter	Encounter	Update	Yes	Yes
msemr_device	Device	Update	Yes	Yes
msemr_observation	Observation	Update	Yes	Yes
msemr_appointmentemr	Appointment	Create; Update	Yes	Yes
msemr_medicationrequest	MedicationRequest	Update	Yes	Yes
msemr_allergyintolerance	AllergyIntolerance	Update	Yes	Yes
msemr_procedure	Procedure	Update	Yes	Yes
account	Organization	Update	Yes	Yes
msemr_location	Location	Update	Yes	Yes
msemr_appointmentemrslot	Appointment	Update	Yes	Yes
msemr_relatedperson	RelatedPerson	Update	Yes	Yes
msemr_claim	Claim	Update	Yes	Yes
msemr_diagnosticreport	DiagnosticReport	Update	Yes	Yes
msemr_condition	Condition	Update	Yes	Yes
msemr_medication	Medication	Update	Yes	Yes
msemr_careplan	CarePlan	Update	Yes	Yes

All

#

A

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1 - 22 of 22 (0 selected)



Healthcare Administration

View and manage your healthcare data all in one place.

Feature Functionality

Holistic View of Healthcare Data

Manage Patient Information

Manage Clinic Information

Track Claims & Coverages

Dynamics 365 | Healthcare Administration

SANDBOX

Home

Recent

Pinned

Administration

People

Organizations

Locations

Clinical Data

Appointments (EMR)

Allergy Intolerances

Observations

Encounters

Procedures

Medication Requests

Conditions

Claims

Coverages

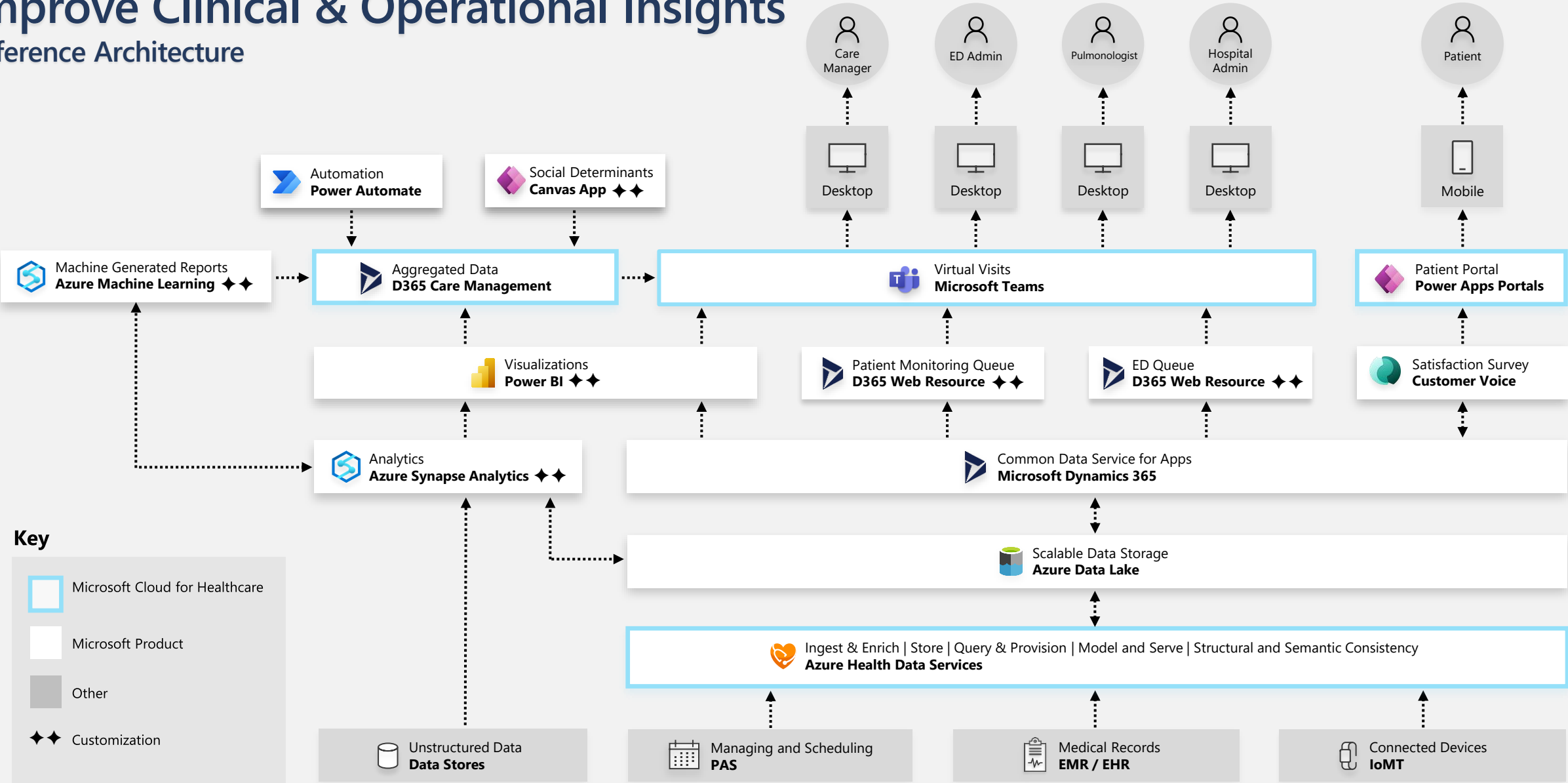
Active Coverages

Name	Beneficiary (Patient)	Coverage Start Date	Group Plan	Network	Type
Contoso AAA Coverage	---	---	---	---	---
Coverage Amber Rodriguez - for MRN0586-0755	Amari Rivera	12/31/2019	Healthcare Plan	EPO	---
Coverage Casey Jensen - for MRN8714-3180	Amari Rivera	12/31/2019	Healthcare Plan	HMO	---
Coverage Elizabeth Moore - for MRN2018-3323	Amari Rivera	12/31/2019	Healthcare Plan	EPO	---
Coverage Jessie Irwin - for MRN3318-3848	Hayden Cook	12/31/2019	Healthcare Plan	EPO	---
Coverage Kayla Lewis - for MRN5067-7547	Rory Nyuyen	12/31/2019	Healthcare Plan	EPO	---
Coverage Madison Butler - for MRN0057-0776	Mikaela Lee	12/31/2019	Healthcare Plan	PPO	---
Coverage Monica Thomson - for MRN3136-5866	Mikaela Lee	12/31/2019	Healthcare Plan	PPO	---
Coverage Nicole Wagner - for MRN2270-5011	Mikaela Lee	12/31/2019	Healthcare Plan	EPO	---
Coverage Olivia Wilson - for MRN1017-3361	Mikaela Lee	12/31/2019	Healthcare Plan	PPO	---
Coverage Reed Flores - for MRN0746-8183	Croa Thomas	12/31/2019	Healthcare Plan	EPO	---
Coverage Remy Morris - for MRN2712-8458	Mikaela Lee	12/31/2019	Healthcare Plan	HMO	---
Coverage Renata Hall - for MRN3611-2276	Mikaela Lee	12/31/2019	Healthcare Plan	PPO	---
Coverage Rowan Murphy - for MRN5344-2201	Mikaela Lee	12/31/2019	Healthcare Plan	EPO	---
Coverage Sara Perez - for MRN8540-3445	Mikaela Lee	12/31/2019	Healthcare Plan	PPO	---
Coverage Taylor Phillips - for MRN13230-5774	Jordan Mitchell	12/31/2019	Healthcare Plan	EPO	---

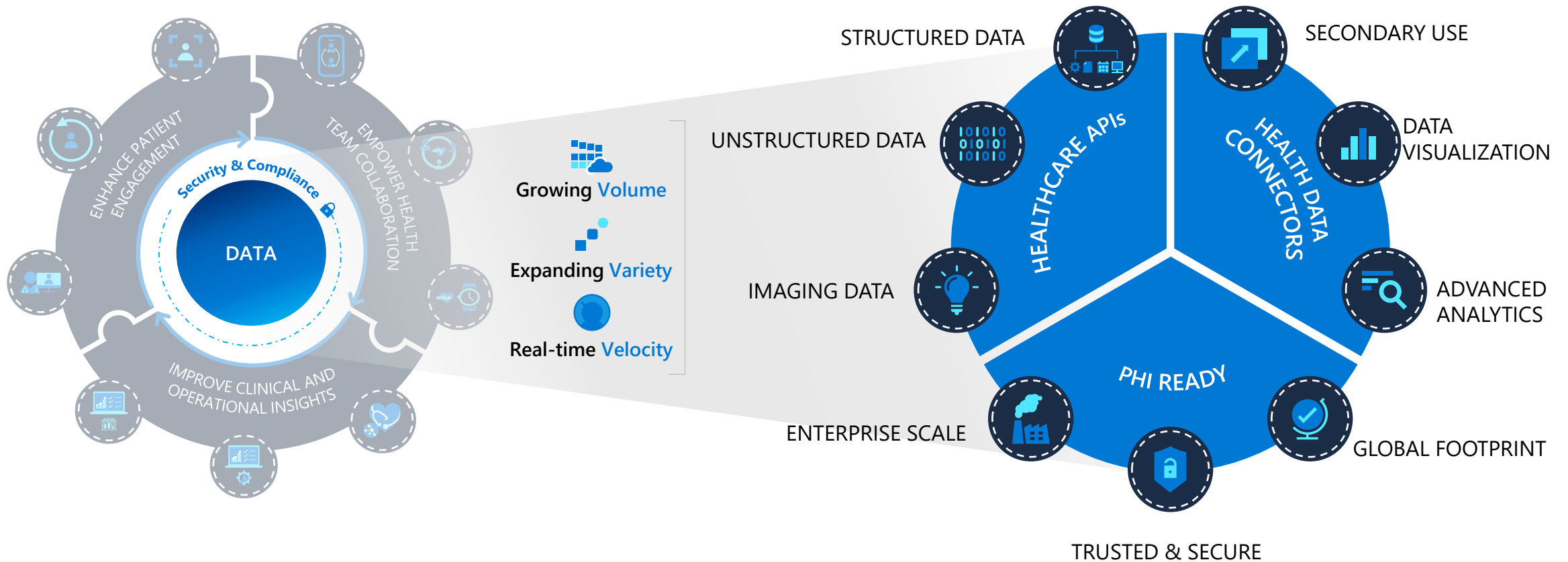


Improve Clinical & Operational Insights

Reference Architecture

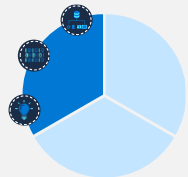
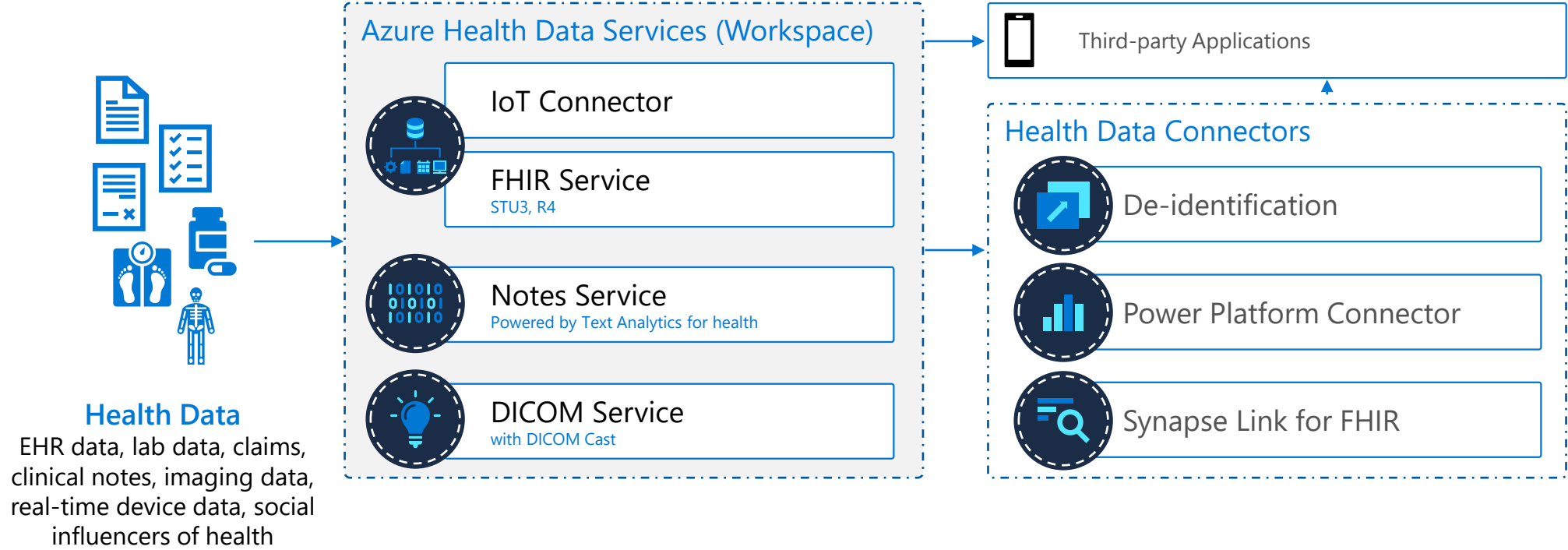


Microsoft Cloud for Healthcare - Azure Health Data Services



Azure Health Data Services

Enabling health data standards in the Microsoft Cloud



Microsoft Cloud for Healthcare



1 - Enhance patient engagement



2 - Empower health team collaboration



3 - Improve clinical and operational insights



4 - Enhance clinician experiences

What's new?

1. Data Integration & Interoperability

- Data Models [Payor, Pharma & Life Sciences) (Preview)*
- Dataverse healthcare API*
- Data integration toolkit *
- Virtual Health data tables*
- Synapse Database templates (GA - Aug) *

2. Unified patient view

- Missed appointments model [Preview Aug] *
- Patient snapshot
- Patient indicators [Preview Aug]

3. Clinical

- Care Management: Improved Care plan
- Care plan in Patient Access Portal [Preview Dec]

4. Administrative

- Patient Outreach: Patient Journeys [Preview Dec]
- Partner Service Center: Embedded Microsoft Teams [Preview Oct]

5. Analytics

- Text Analytics for Health multi-language support (French, Italian, German, Spanish, Hebrew, Portuguese) [Preview Sep]

6. Free 30-Day MC4H trial experience *

[What is new and planned for Cloud for Healthcare](#)

Text Analytics for health Structuring to FHIR Capability

- FHIR is an interoperability standard for electronic exchange of healthcare information
- ***Text Analytics for health Structuring to FHIR Capability*** enables transformation of unstructured clinical documents into FHIR resource bundles
- This enables patient and population insights for decision support across clinical systems

DIAGNOSES

1. T1bN0Mx well-differentiated mucinous carcinoma; ER and PR positive, HER-2 negative. Currently, additional anastrozole changed to tamoxifen.

2. Osteoporosis.

3. Bone pain, chronic.

4. Diabetes mellitus, poor control.

5. Status post cholecystectomy and C-section.

REVIEW OF SYSTEMS

No evidence of breast cancer.

Assessment and Plan

No diastolic murmurs or rubs

MEDICATIONS

She is not taking penicillin.

She is not taking any new medications.

VITAL SIGNS: Weight is 169 pounds and this is up a pound from previous office visit. The pulse is 93 and regular. Blood pressure is 115/65. She is afebrile.

PHYSICAL EXAMINATION

Focal rib films were not done.

PCR came out negative.

DISPOSITION

I have given her some Norco 7.5/325 mg for pain, cautioned her about constipation. I have given her some fluconazole 100 mg tablets to be taken daily for x7 days and recommend some Mycolog cream as well. She has refills on the fluconazole. I have cautioned her to take calcium with vitamin D in adequate amounts daily. She relates that she is going to return to [Country] permanently in the very near future. I will avail her of her medical records. She will be seen p.r.n.



DIAGNOSES

1. T1bN0Mx well-differentiated mucinous carcinoma (UMLS: C0007130) ; ER (UMLS: C0034804) and PR (UMLS: C1521726) positive (UMLS: C1702024) negative (UMLS: C1702024) .

Currently, additional anastrozole (UMLS: C0290883) changed to tamoxifen (UMLS: C0039286) .

2. Osteoporosis (UMLS: C0029456) .

3. Bone pain (UMLS: C0151825) chronic (UMLS: C0000320) .

4. Diabetes mellitus (UMLS: C0011849) poor control (UMLS: C0000320) .

5. Status post cholecystectomy (UMLS: C0008320) and C-section (UMLS: C0007876) .

REVIEW OF SYSTEMS

No evidence of breast cancer (UMLS: C0006142) negation (UMLS: C0000320) .



```
{
  "id": "b2dbc900-623d-4884-907d-ca71641746d4",
  "type": "document",
  "entry": [
    {
      "fullUrl": "Composition/e64fafd9-32df-42e7-8605-9942be86243c",
      "resource": {
        "resourceType": "Composition",
        "id": "e64fafd9-32df-42e7-8605-9942be86243c",
        "status": "final",
        "type": {
          "coding": [
            {
              "system": "http://loinc.org",
              "code": "LP74253-3",
              "display": "Progress Note"
            }
          ]
        },
        "text": "Progress Note"
      },
      "subject": {
        "reference": "Patient/00cf4242-a5e4-4703-9cca-12e67825602b",
        "type": "Patient"
      },
      "encounter": {
        "reference": "Encounter/3c7d5d8f-02bb-41d5-a8c5-a4700feb45a1",
        "type": "Encounter",
        "display": "ambulatory"
      },
      "date": "2020-10-21",
      "author": [
        {
          "reference": "Practitioner/8f3a87ec-3b8c-4c24-92b1-ca209b380c9a",
          "type": "Practitioner",
          "display": "Unknown"
        }
      ]
    }
  ],
  "title": "Progress Note"
}
```

Input:

Unstructured Clinical Document

Health data extraction:

Entity Recognition, Link to Coding,
Relation Extraction, Assertions

Output:

FHIR resources bundled to
represent the Clinical Document

TA4H Scenarios: Capabilities, Benefits, and Examples

Health Provider

Improve clinical and operational insights

Patient Insights

Example

- Create a prediction model to identify at-risk patients for preventative measures

Benefit

- Doctors can make better recommendations, save time, and attend to more patients

Health Provider

Enhance clinician experiences

Assist Clinical Coding

- Doctor automatically captures diagnostic codes for billing purposes

- Reduce tedious, time-consuming patient reporting work for doctors

Life Sciences

Accelerate research & development innovation

Clinical Trials Matching

- Pharmaceutical company needs to source relevant candidates for clinical trials

- Easily identify patients for clinical trials based on eligibility criteria

Health Provider

Improve clinical and operational insights

Population Insights & Statistics

Example

- Health provider seeks to gain insights and find health patterns across patients

Benefit

- Analyze population segments with specific health characteristics

Health Provider

Enhance clinician experiences

Automate Registry Reporting

- Clinician needs to automate data extraction for HEDIS reporting

- Assists curation and annotation of doctor visit information

Health Payor

Optimize care management & outcomes

Drug Pre-Authorization

- Automate pre-authorization for cancer drugs such as Keytruda

- Automating workflows saves time for physicians

Thank you!