



INDIA | MAY 25, 2023

HCRT006

CARPL.ai - Driving the healthcare revolution, by enabling AI from research to clinic

Abhishek Sarolia
Solutions Architect
AWS India

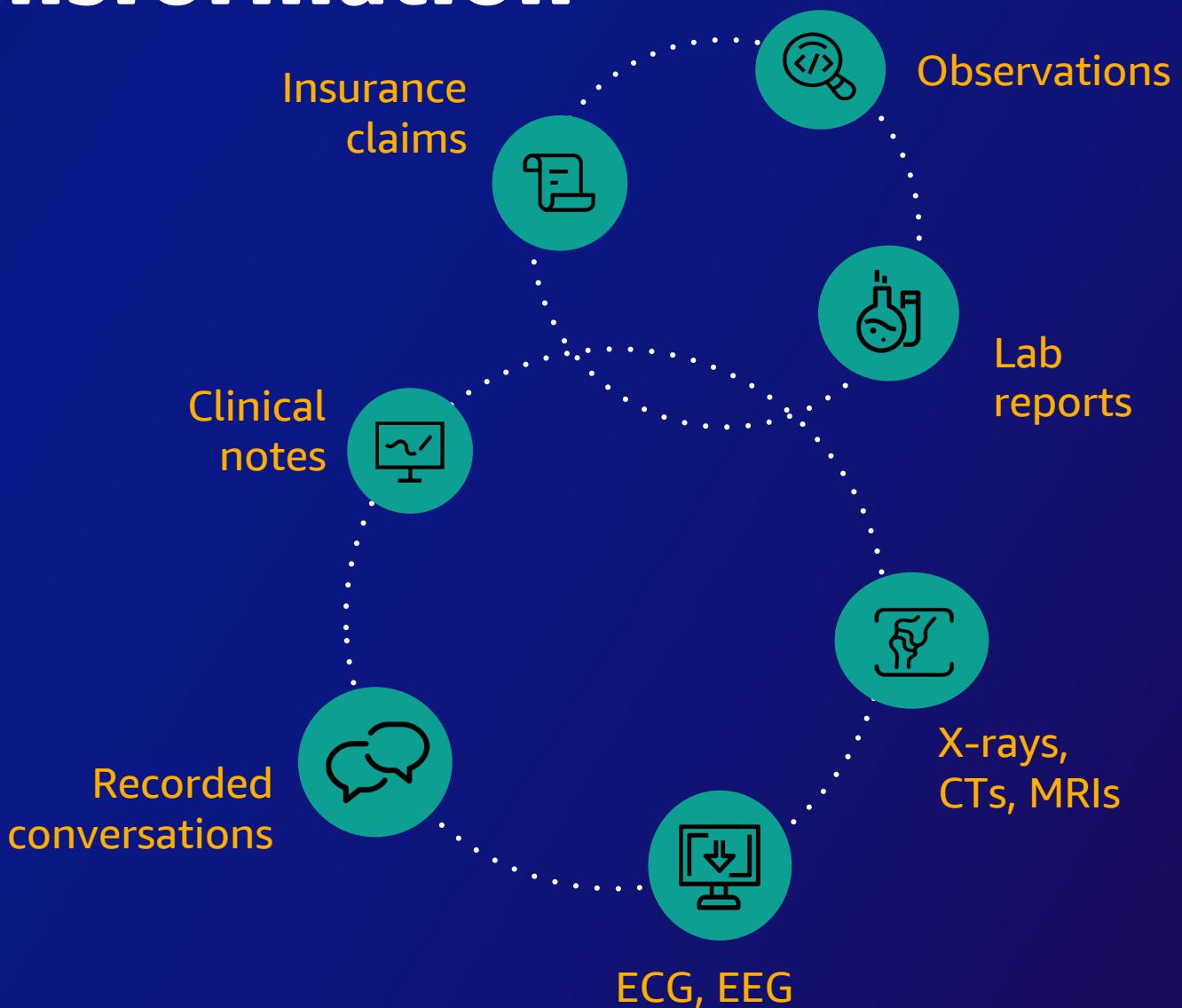
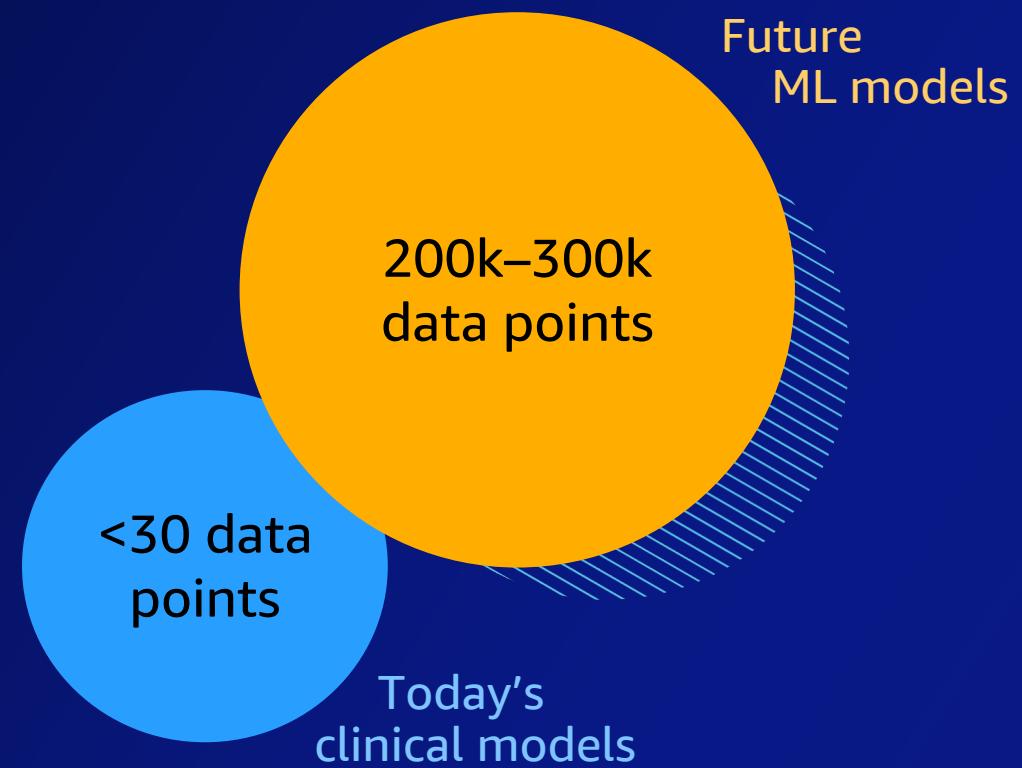
Dr. Vidur Mahajan
Chief Executive Officer
CARPL.AI



© 2023, Amazon Web Services, Inc. or its affiliates. All rights reserved.

CARPL

Healthcare digital transformation



Challenges we are hearing from healthcare and life science customers

Health data is vast, multi-modal, and siloed. The process to extract information is **labor-intensive and error prone**

Physician burnout, lots of manual processes

The cost of healthcare continues to grow and we need to find new ways to **reduce costs**

Insufficient security, compliance, and availability can hamper our ability to innovate without assurances around disaster recovery and data governance

COVID-19 forced the health industry to quickly adapt and find new ways to operate

Global health disparities continue to widen and **health equity** remains a challenge

How can machine learning help?



Modernize care infrastructure



Improve and accelerate diagnosis



Accelerate drug discovery



Enable scientific discoveries

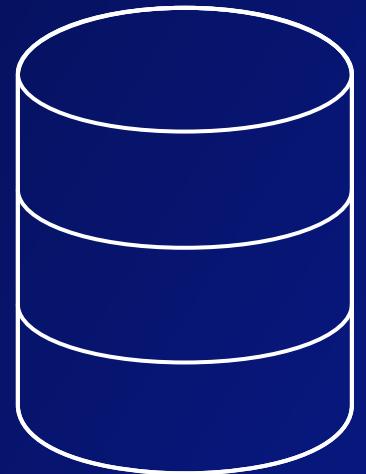


Protect patient privacy



Manage population health

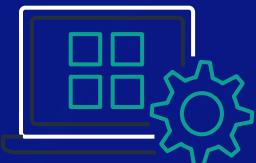
Innovate and Scale



Health data



Machine learning



Advanced analytics

IDENTIFY TRENDS

Search and query data
Interactive dashboards

MAKE PREDICTIONS

Predictive models for chronic or
acute conditions

SHARE DATA SECURELY

Easily share and access data

Purpose-built services for Healthcare

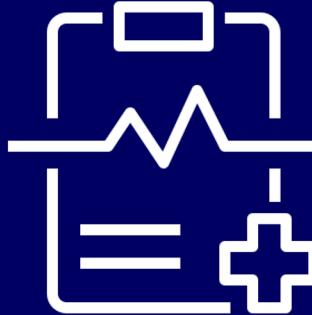
Make sense of health data to **improve care** and make **better predictions**



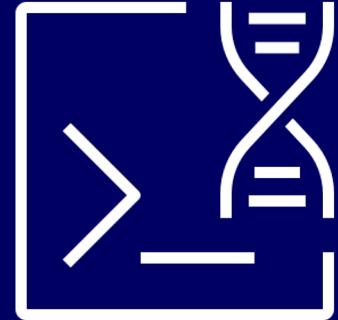
**Amazon Comprehend
Medical**



**Amazon Transcribe
Medical**

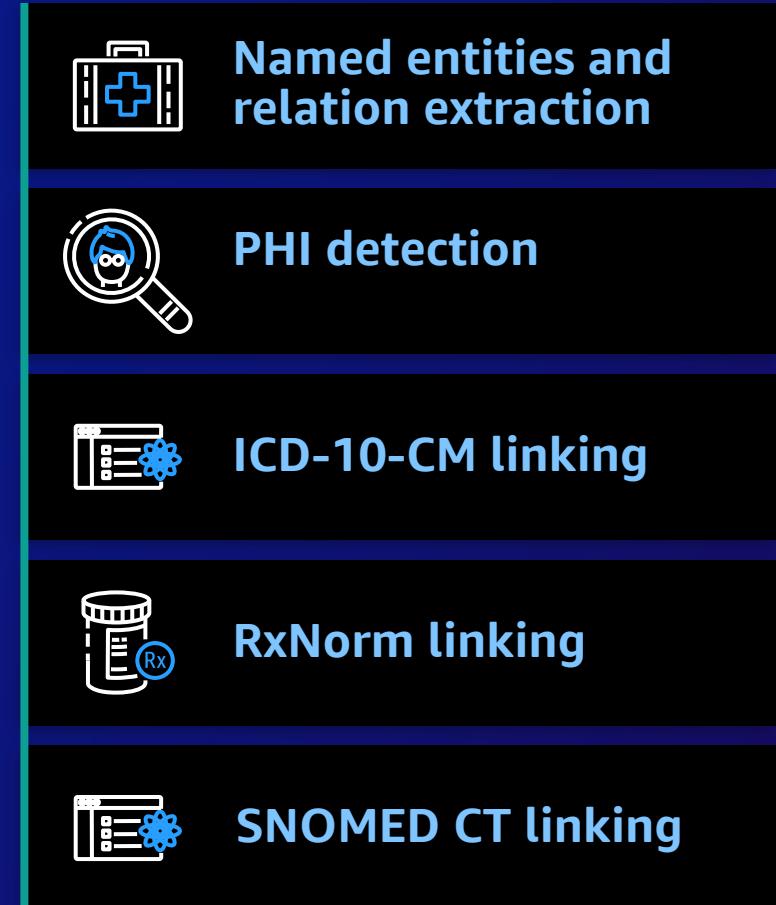
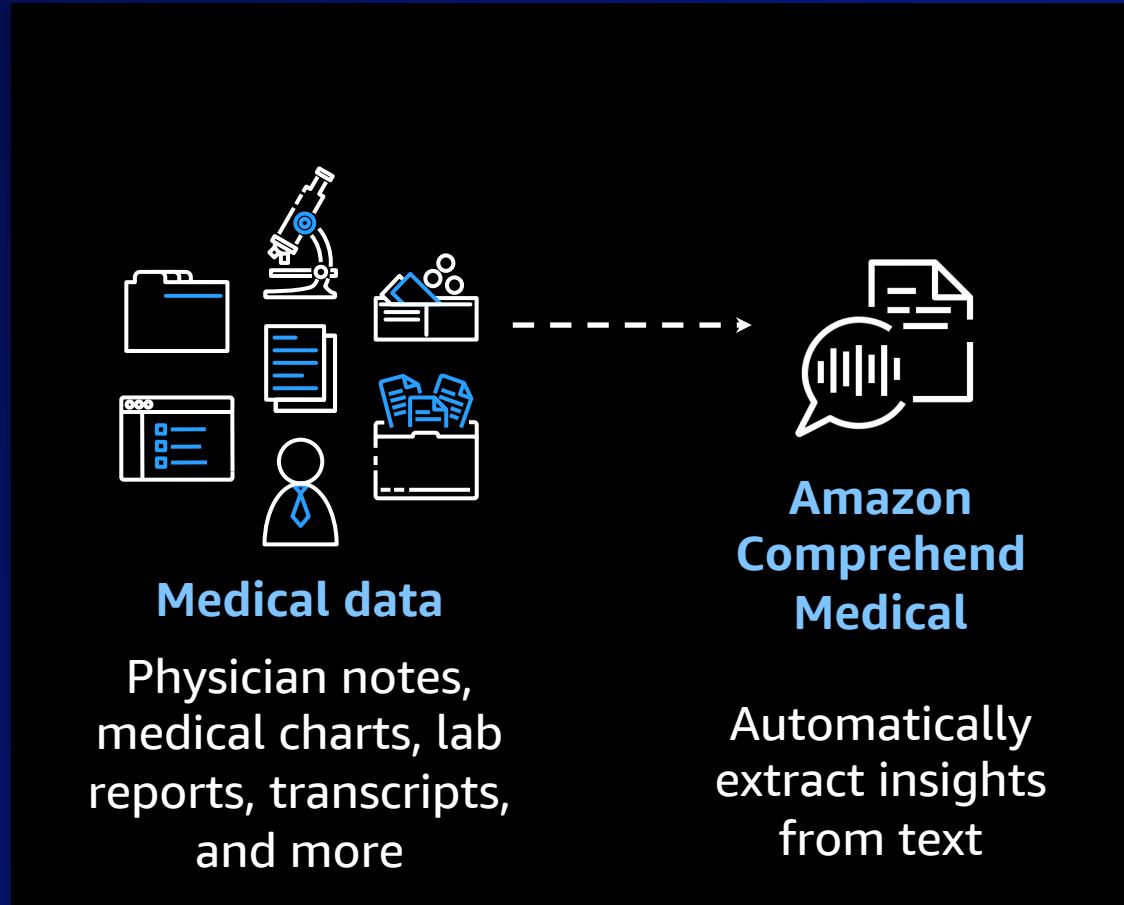


**Amazon
HealthLake**



**Amazon
Omics**

Amazon Comprehend Medical



Amazon Transcribe Medical



US English



Word-level
time stamps



Word-level
confidence scores



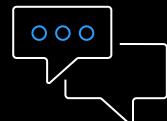
Speaker/channel
identification



Punctuation
and capitalization



Multiple
specialties



Dictation/
conversation
transcripts



Alternative
transcriptions



PHI
identification



Custom
vocabulary

Amazon HealthLake



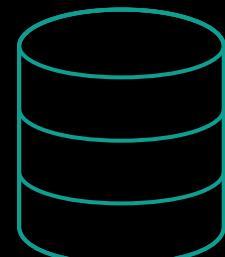
Structured &
unstructured data
in
FHIR format

Create API

Update API

Delete API

Amazon HealthLake



Structure
Tag and index
FHIR v4 resource
definitions
Medical NLP
Search and query

Search API

Read API

Export API



Amazon
SageMaker



Amazon
QuickSight



Third-party
applications

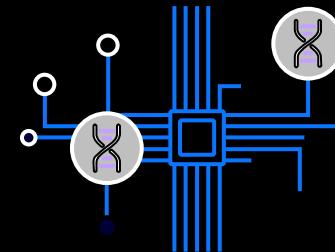
Amazon Omics



**Multiomic and
multimodal
analysis**



**Population-level
scale**



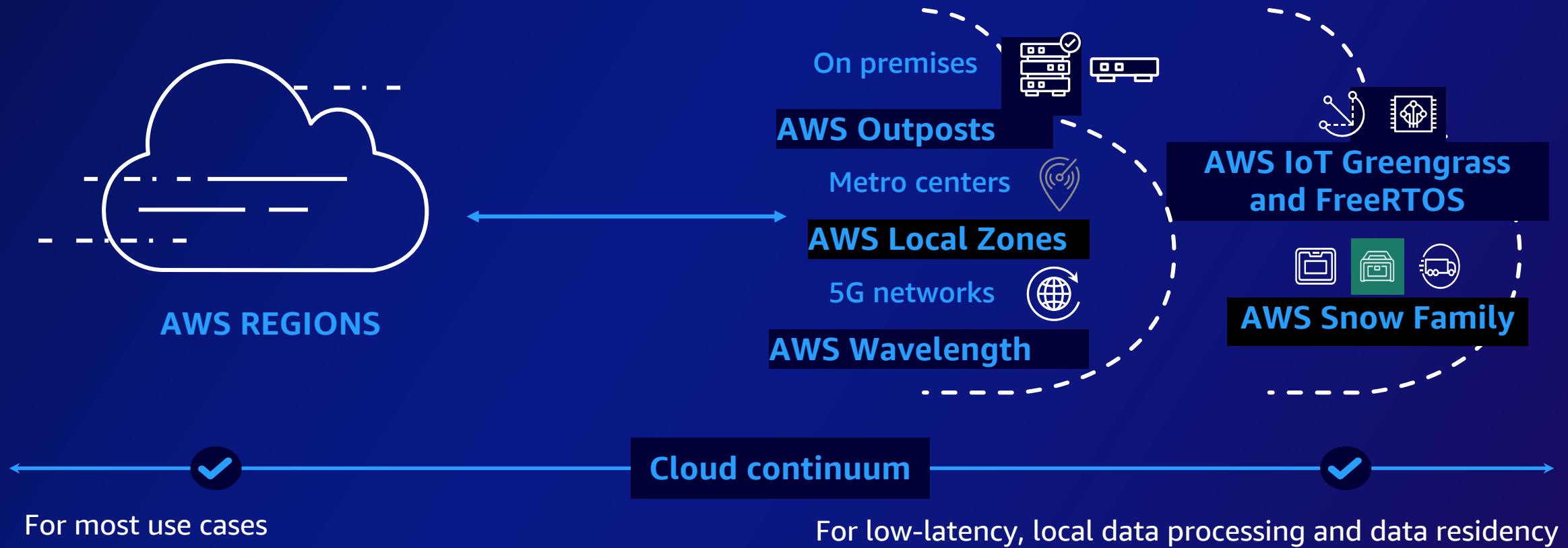
**Fully managed
bioinformatics
computation**



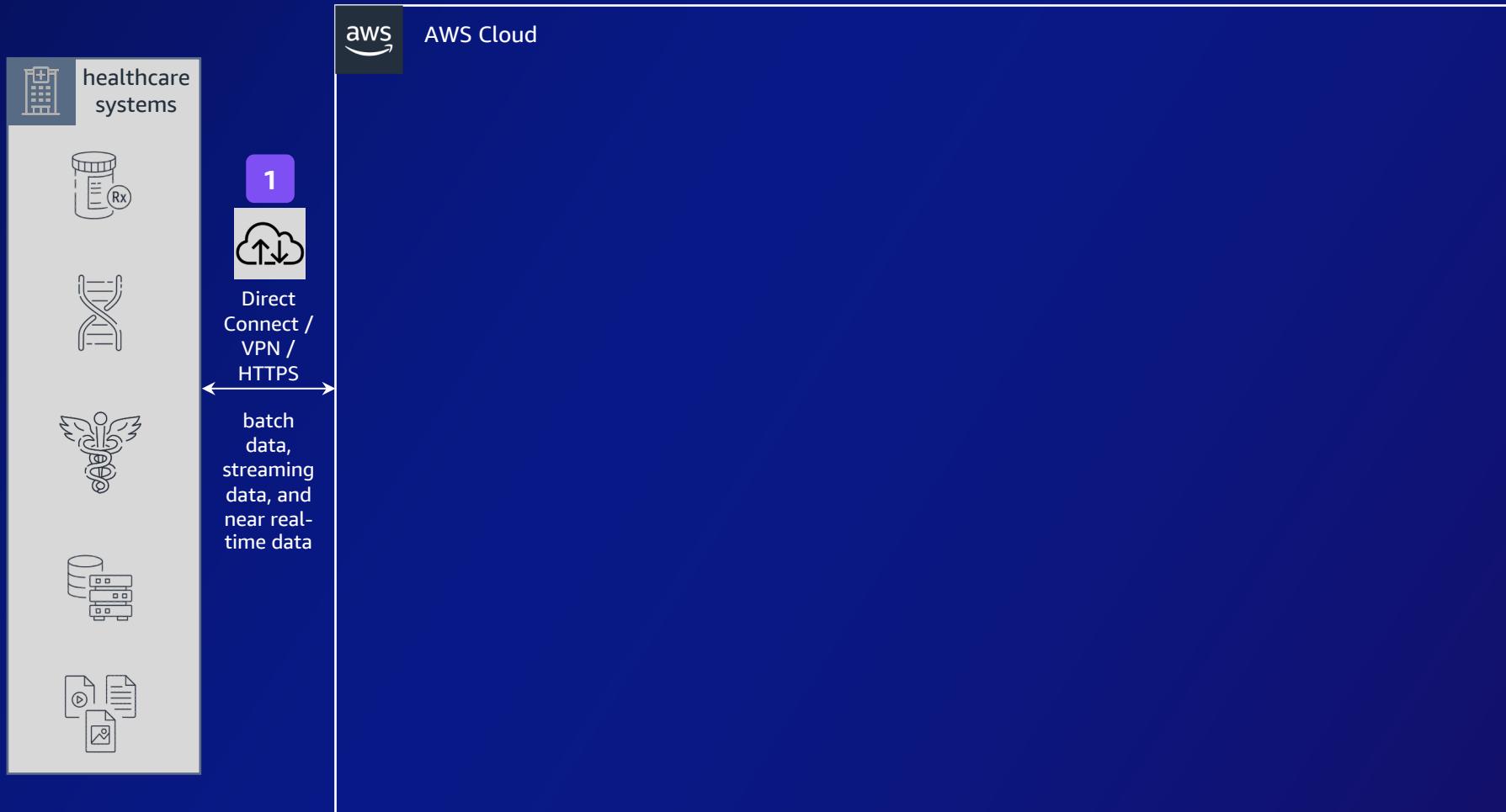
**Built-in security,
privacy, and
compliance**

Cloud continuum for Healthcare

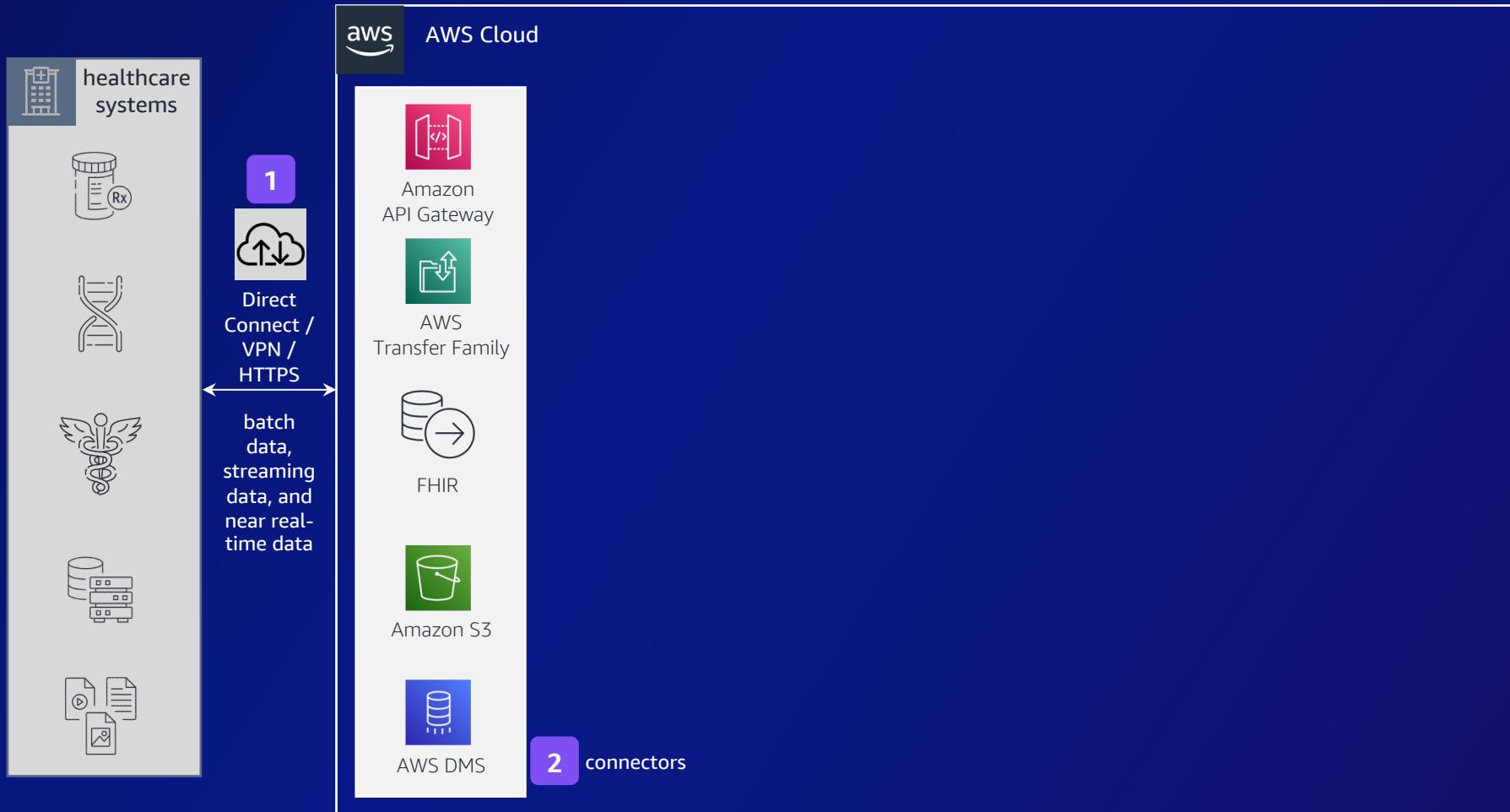
AWS – DELIVERING CLOUD WHERE YOU NEED IT



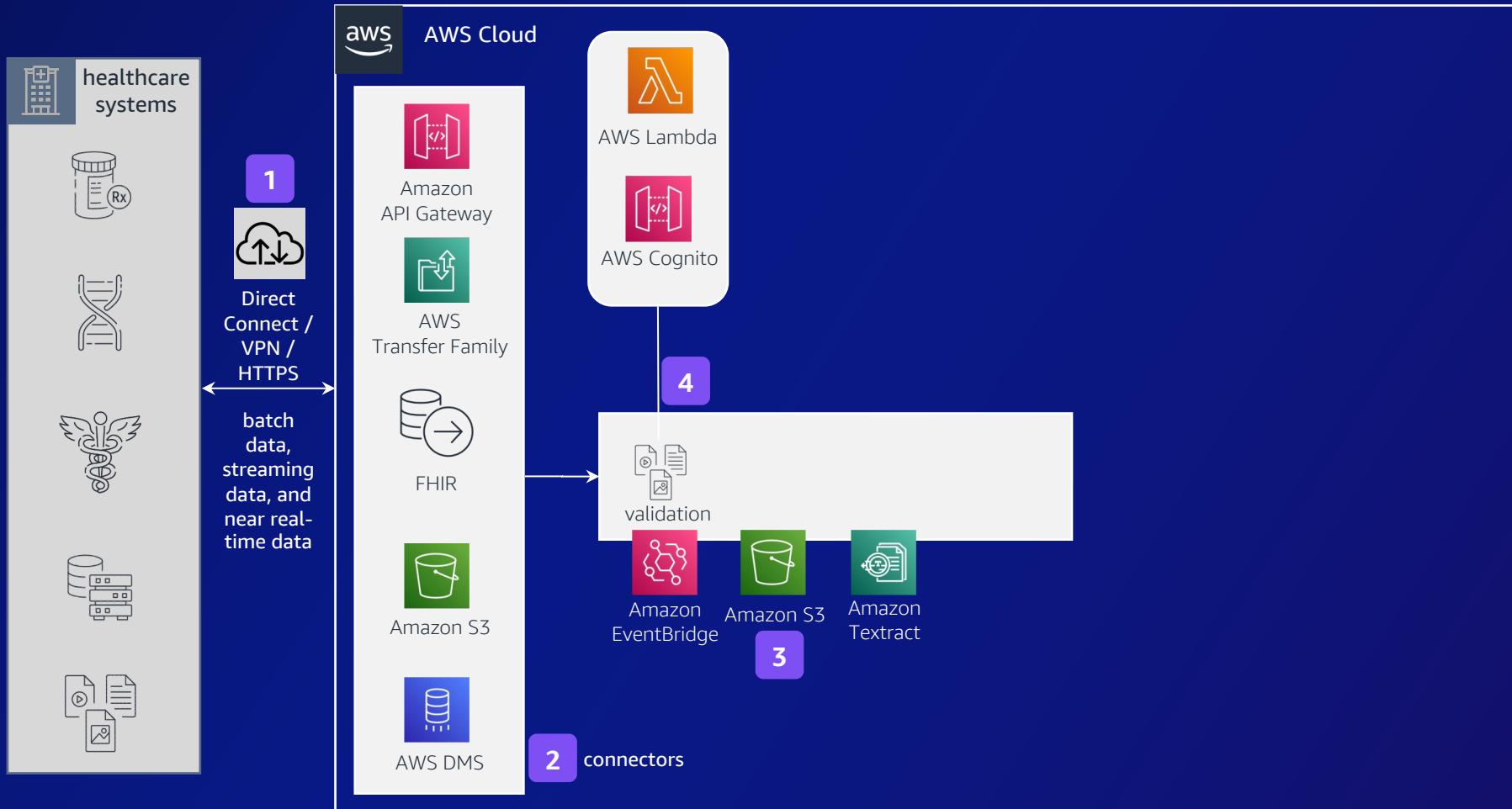
Healthcare interoperability



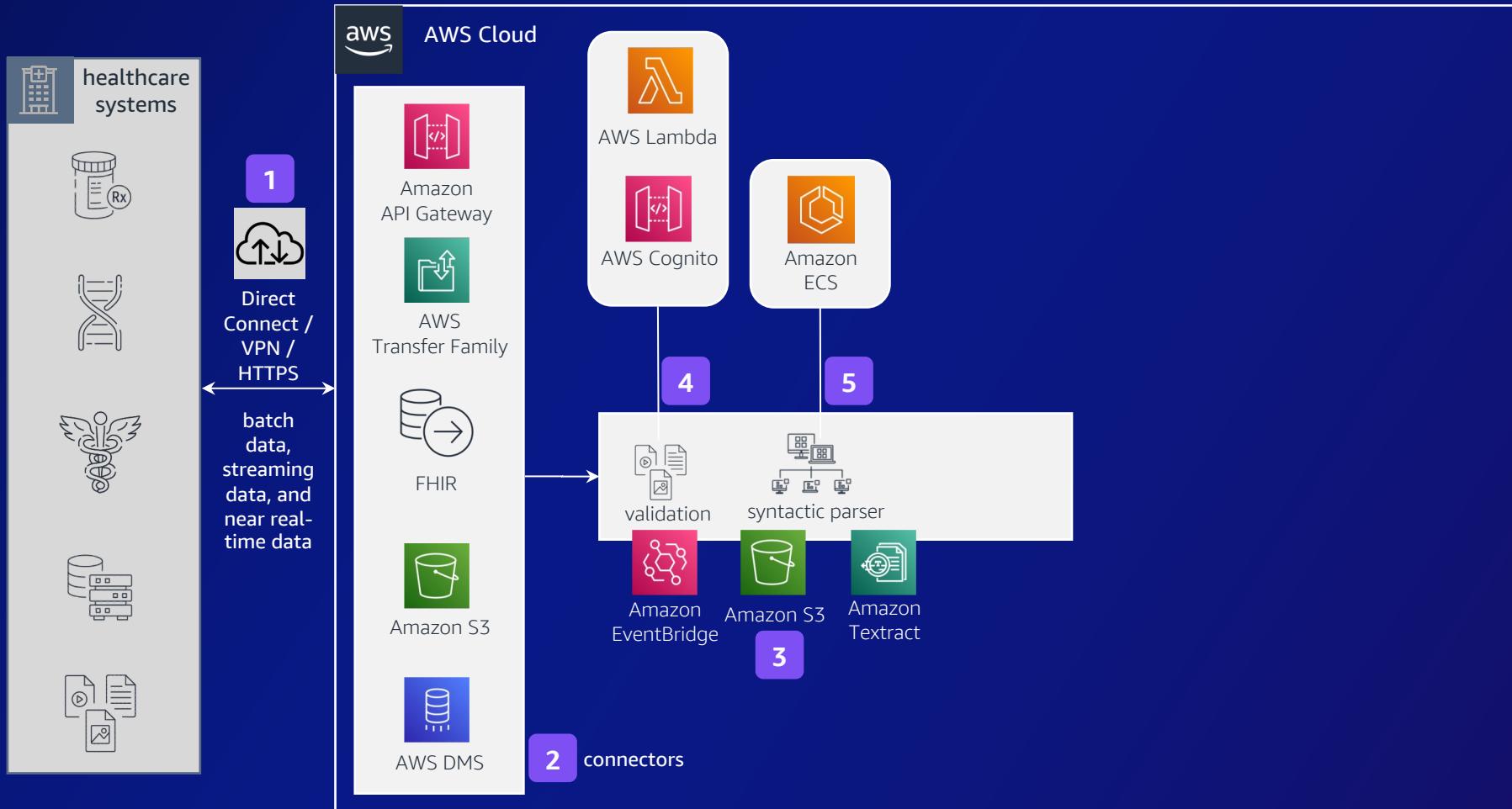
Healthcare interoperability



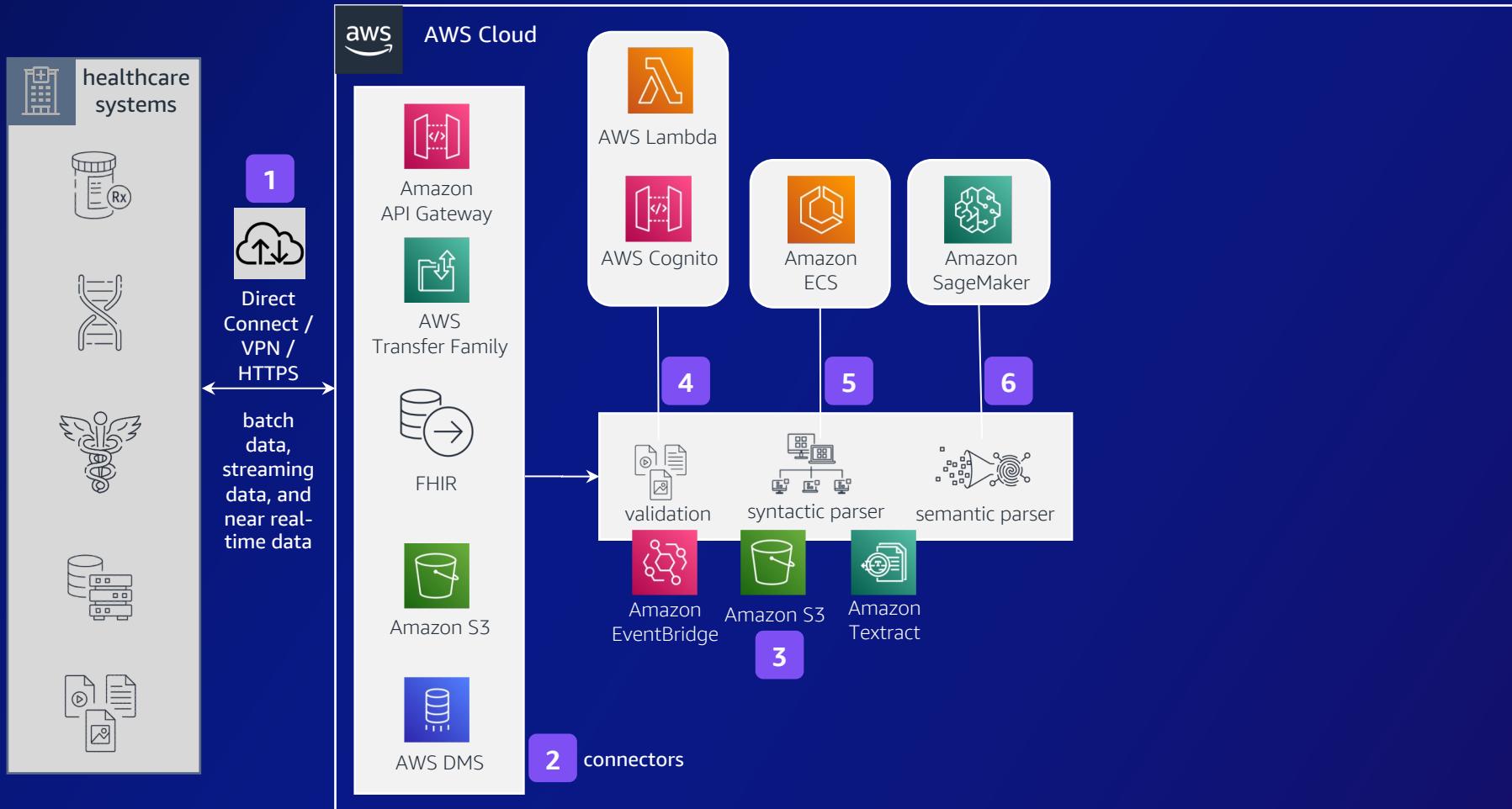
Healthcare interoperability



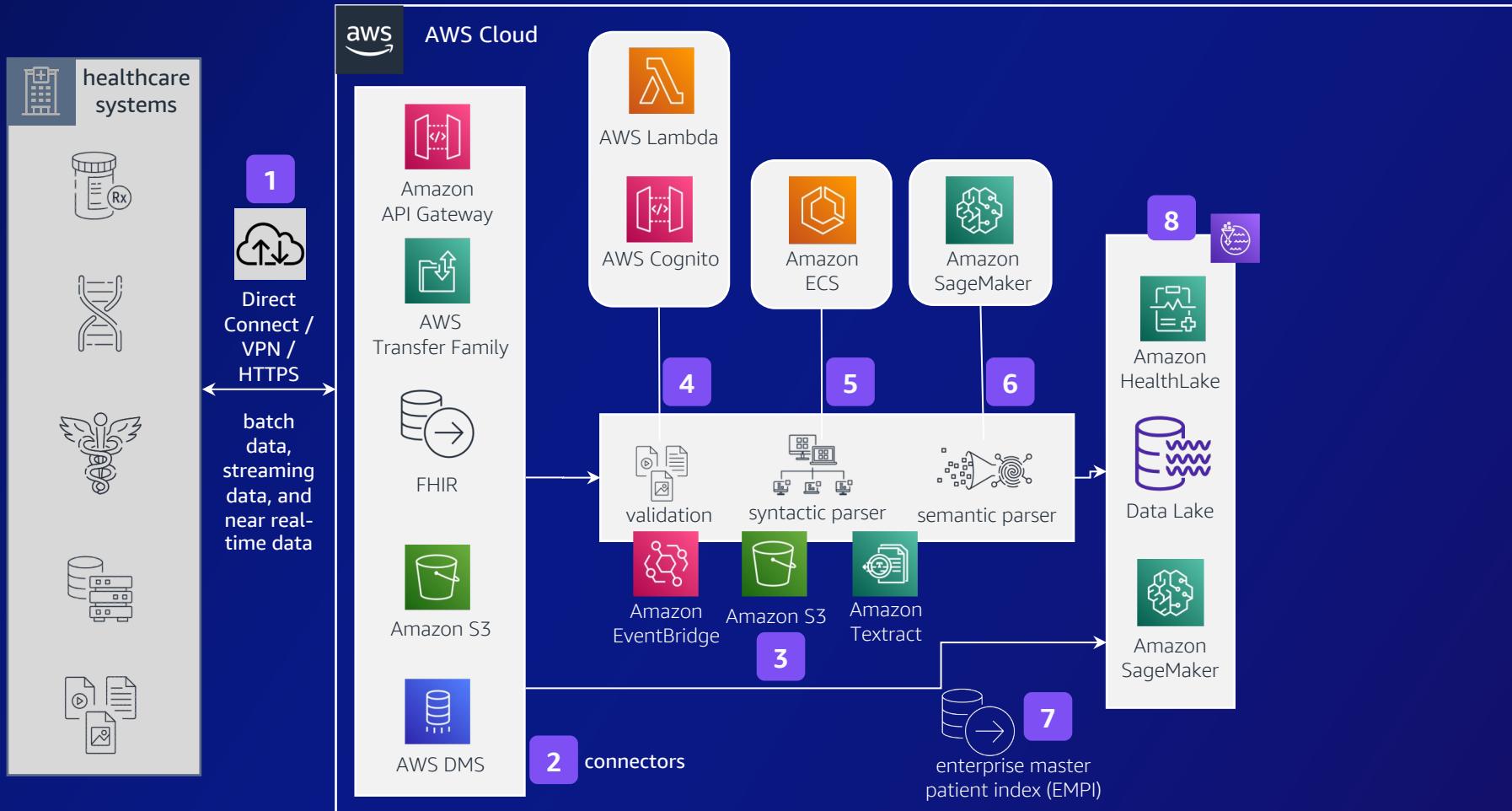
Healthcare interoperability



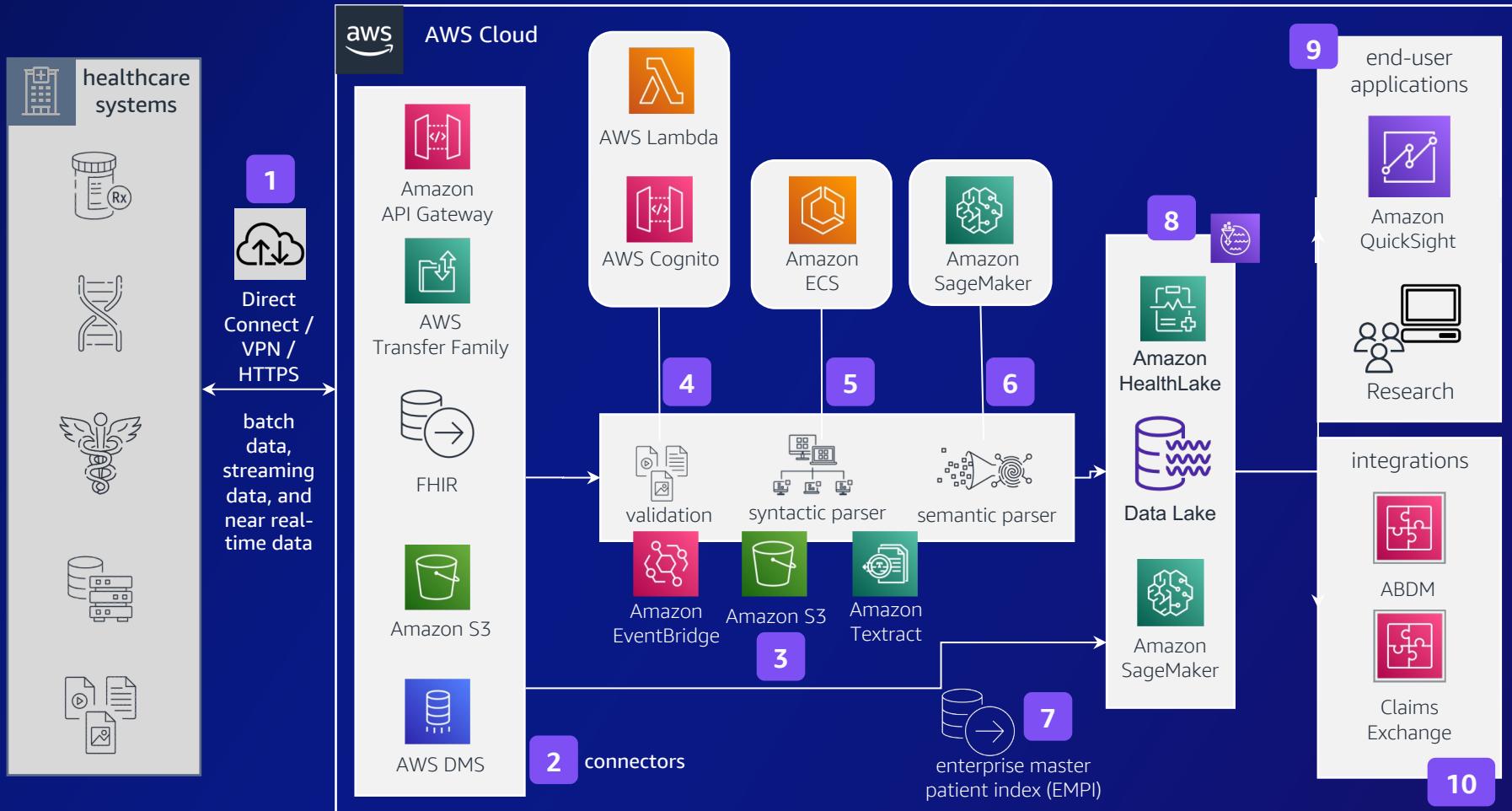
Healthcare interoperability



Healthcare interoperability



Healthcare interoperability



HCRT006

CARPL.ai - Driving the healthcare revolution, by enabling AI from research to clinic

Abhishek Sarolia
Solutions Architect
AWS India

Vidur Mahajan
Chief Executive Officer
CARPL.AI



© 2023, Amazon Web Services, Inc. or its affiliates. All rights reserved.

CARPL

Connecting AI Applications with Healthcare Providers Improving Access, Affordability and Quality of Medical Care

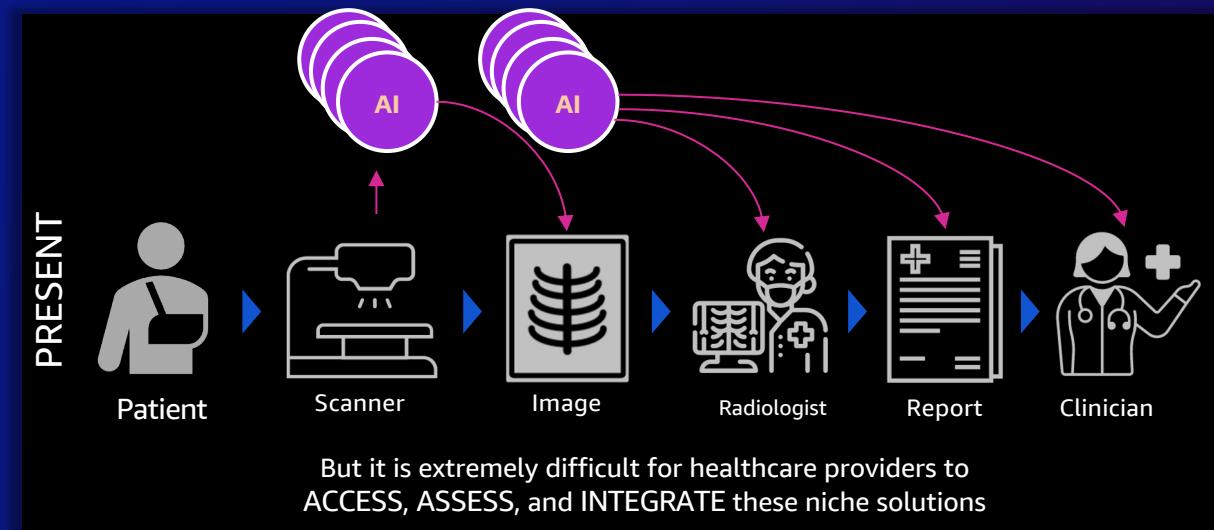
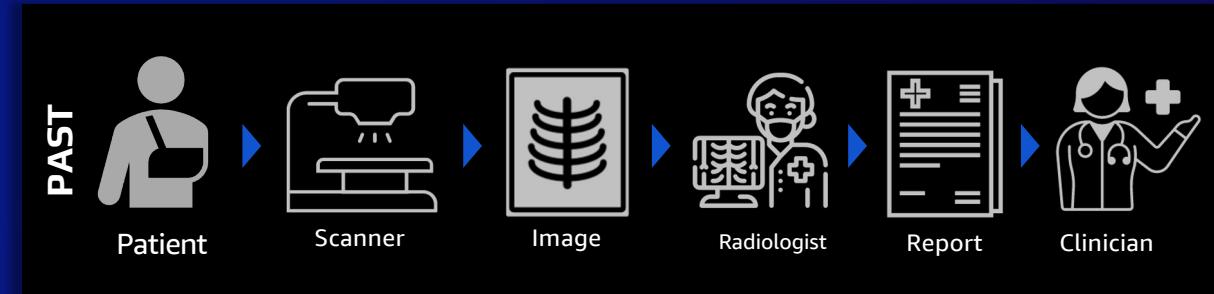
Automation is the future of diagnostics

But radiology has not yet seen the exponential impact that lab medicine has seen

**LAB MEDICINE HAS BEEN TRANSFORMED BY
AUTOMATION & ROBOTICS...**



**...AND SEVERAL ATTEMPTS ARE BEING MADE IN
RADIOLOGY**



Fundamental issues with adopting AI at scale

A fragmented ecosystem, with **niche use-cases** makes AI adoption difficult

DIFFICULT TO ACCESS

Fragmented Ecosystem

100s of AI applications out there – how can HCPs get in touch with so many companies?

DIFFICULT TO ASSESS

Lack of Generalizability

Local validation is essential for AI deployment – AI validations at scale are expensive and time-consuming

DIFFICULT TO INTEGRATE

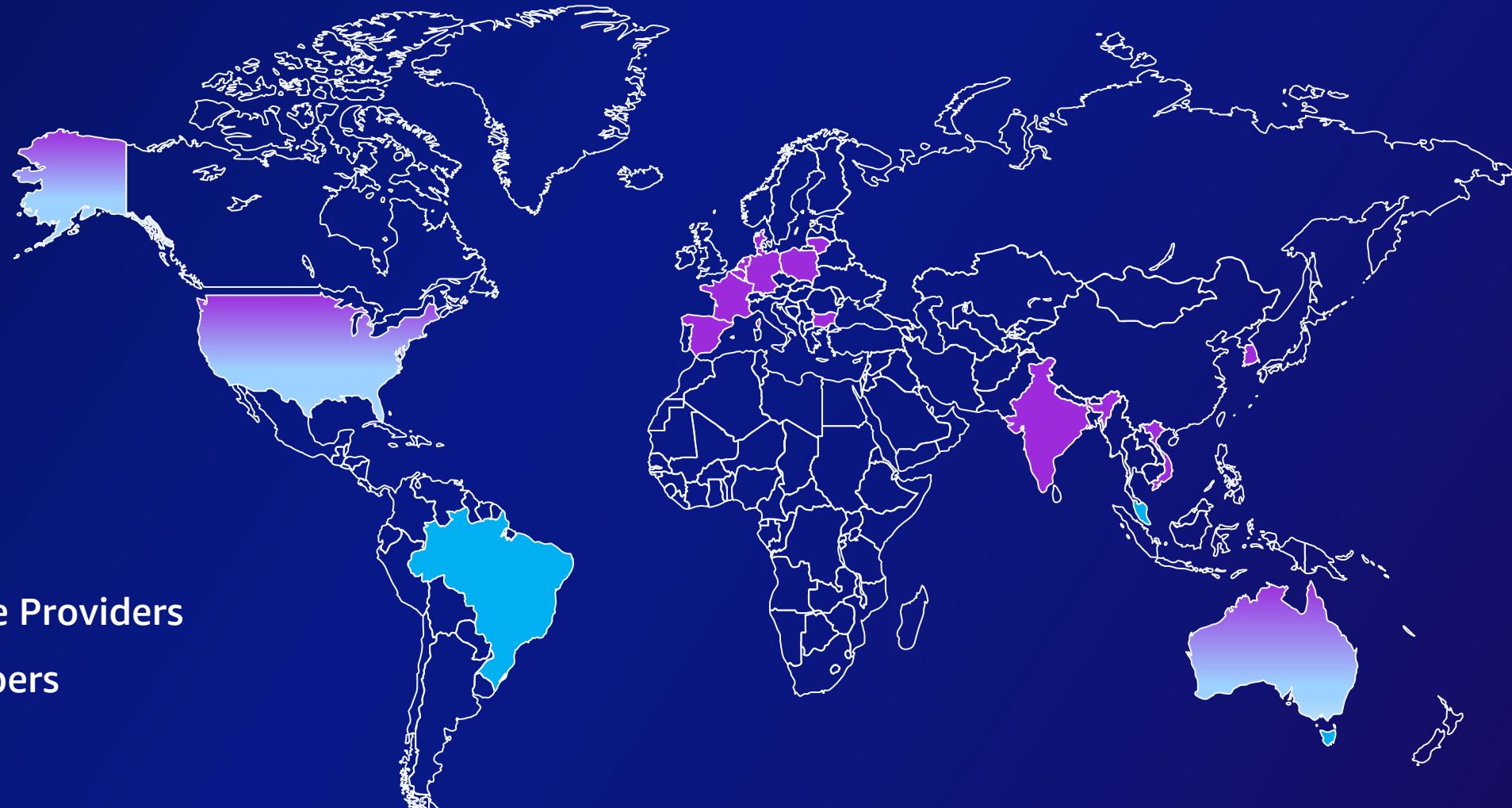
Multiple RIS-PACS Integrations

Multiple viewers, multiple integrations - impossible for HCPs to use multiple AI

A **PLATFORM APPROACH** that combines all these elements is the only way to **UNLOCK EXPONENTIAL VALUE** from AI solutions

CARPL.ai - Global healthcare network

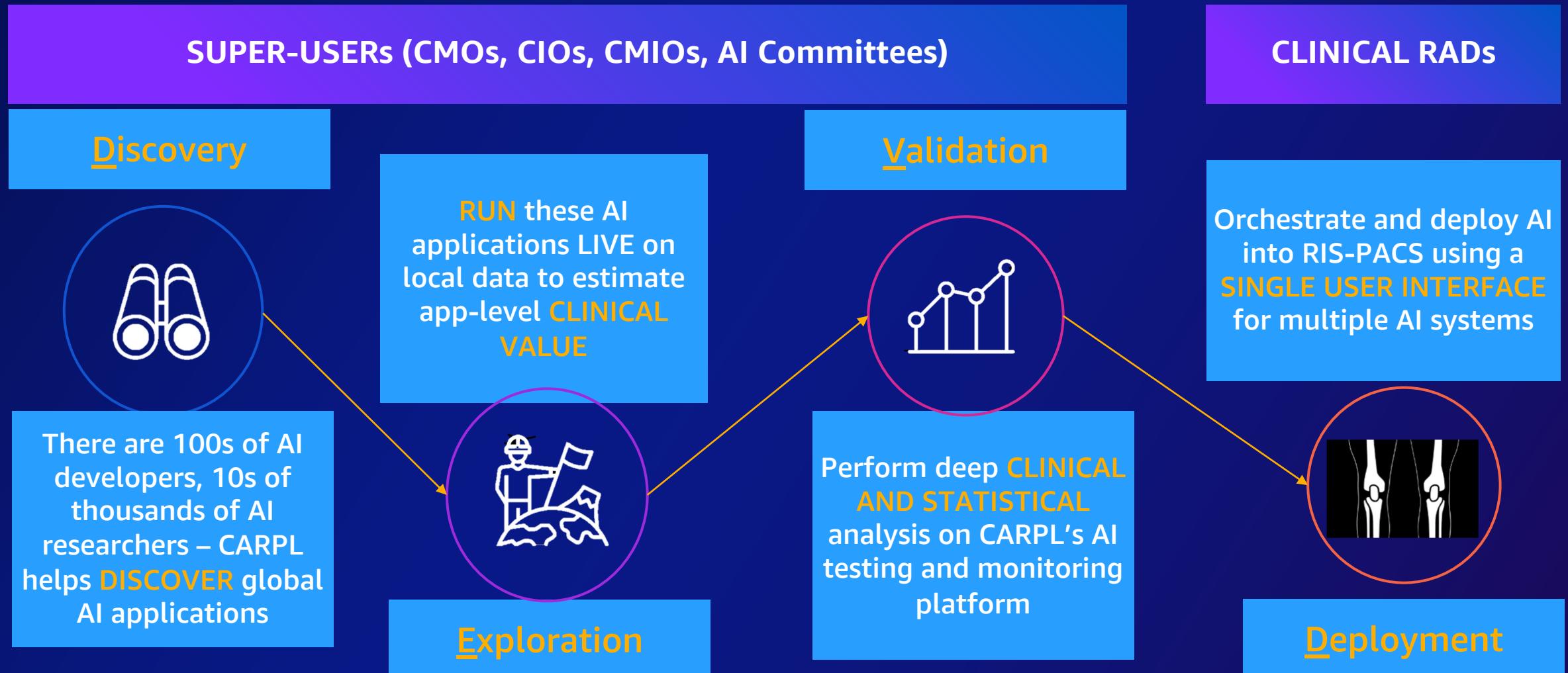
Democratizing access to healthcare AI



© 2023, Amazon Web Services, Inc. or its affiliates. All rights reserved.

CARPL's D.E.V.-D. framework

From enabling access, accelerating pilots, to single-interface deployment



The journey to cloud in three phases

From virtual machines in 2019 to native services 2022 onwards

Focus Areas

Phase 1

Identify key challenges across the ecosystem.

1

Phase 2

Areas of cloud adoption across various verticals.

2

Phase 3

Outcomes and vision with AWS going forward.

3

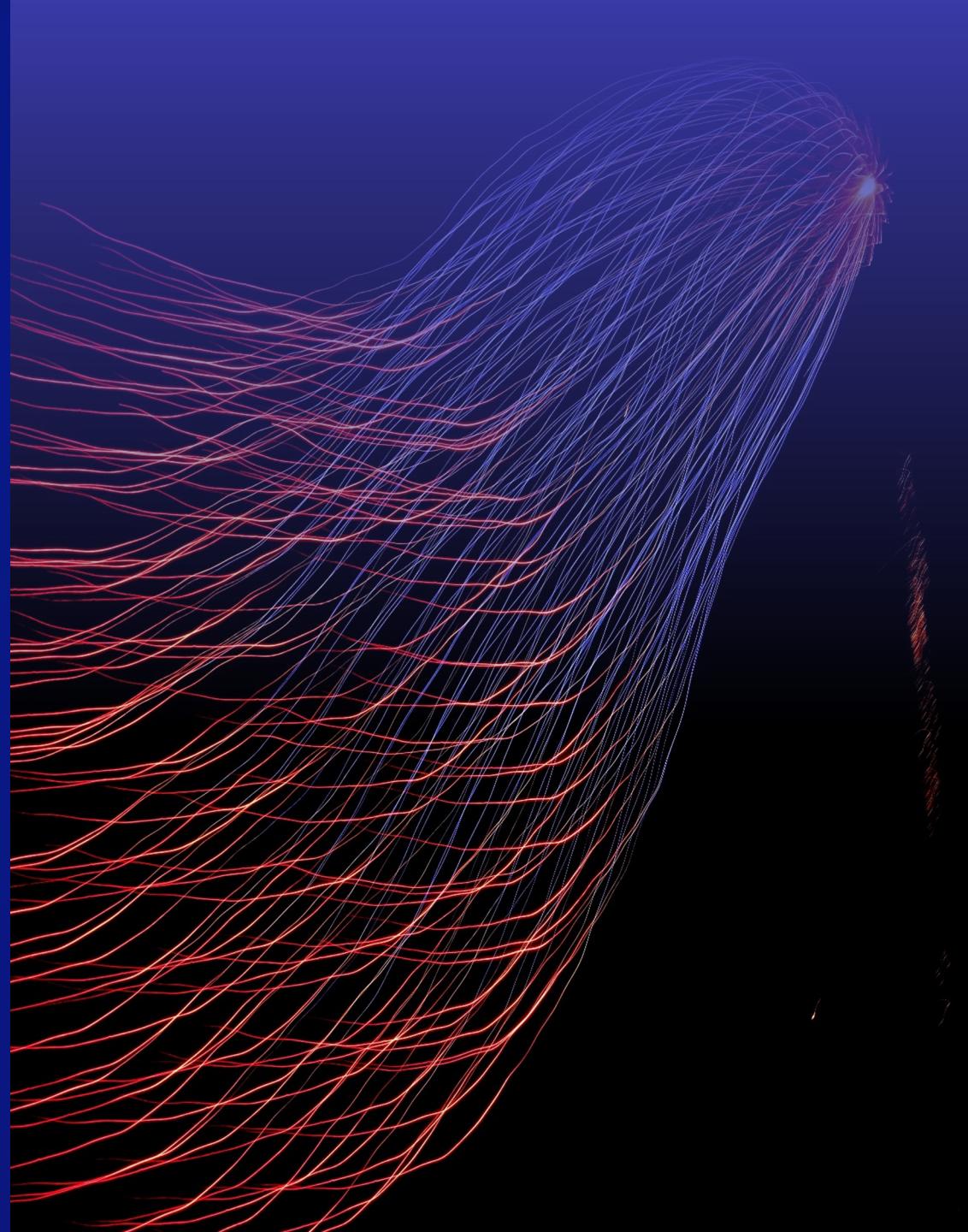
Working with an **AWS solution architect** helped provide the CARPL.ai team support across multiple challenges; Aiding in best practices mapping, and ensuring infrastructure deployment is secure, cost-effective, scalable & robust.

On-premise to Cloud

Before using AWS to power our cloud deployment capabilities, CARPL delivered **on-premise** deployment of virtual machines at healthcare provider centers worldwide.

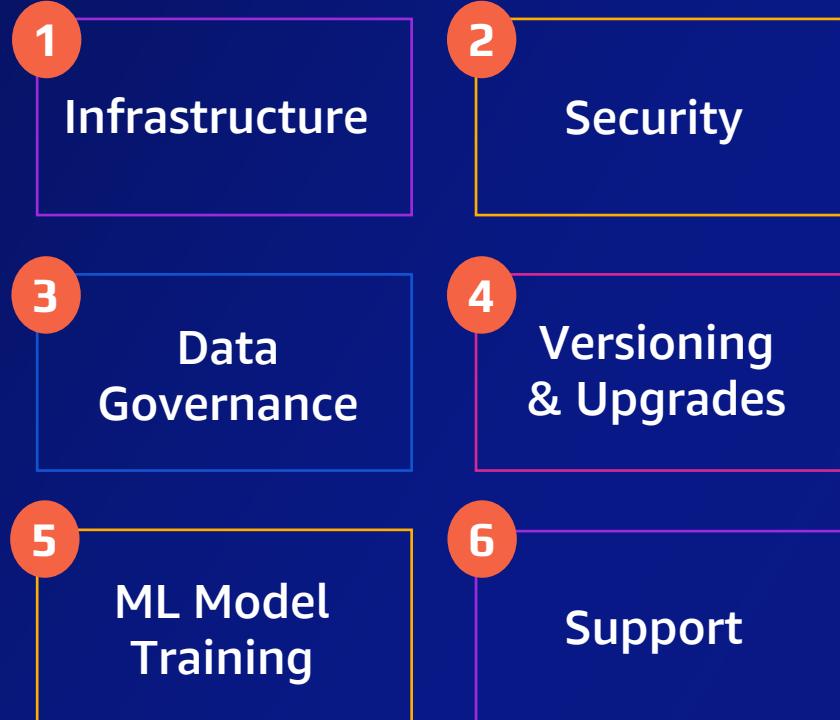
This posed the following challenges:

- Expensive support
- Difficulty in demonstrating value
- Reduced account penetration
- Scalability limitations on running multiple inferences for the end user.



AWS empowers CARPL to deliver value at scale

CARPL.ai uses AWS solutions across various verticals.



Scalability

Seamless D.E.V.D. value, globally



Accessibility

Increase in reach of capabilities



Security

Elevate security on cloud



Support

Support across all functionalities



Value-driven outcomes

SCALABILITY

Deployment on Amazon Elastic Kubernetes Service allows high availability and scalability for our global client base.

ACCESSIBILITY

Availability of data centers across multiple locations allows us to cater to all customers (geography agnostic), improving reach and customer service capabilities.



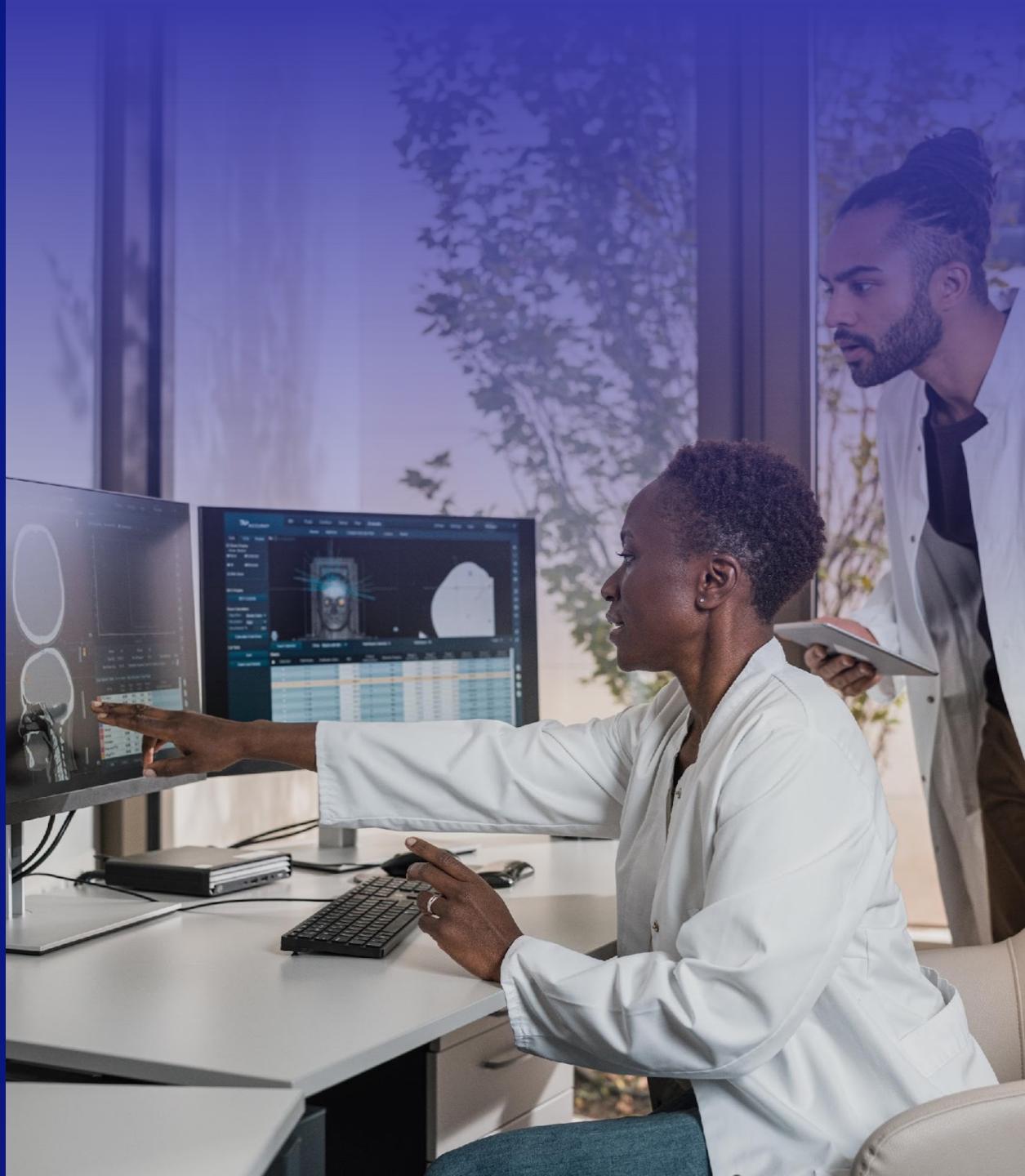
Value-driven outcomes

SECURITY

AWS security features elevate our security on the cloud and enable us to confidently and securely meet any compliance requirements.

SUPPORT

Managed database services allow us to handle data backups and perform efficient disaster recovery.



“ We look forward to building on our partnership with AWS as we continue to deploy CARPL.ai around the world, creating true clinical impact and improving patient lives globally ”

Rohit Takhar
Chief Architect, CARPL.ai

Additional resources



https://aws.amazon.com/health/?nc2=h_ql_sol_ind_hcl
AWS for Health



<https://aws.amazon.com/health/healthcare/solutions/>
Healthcare Solutions on AWS



<https://docs.aws.amazon.com/wellarchitected/latest/healthcare-industry-lens/healthcare-industry-lens.html>
Healthcare Lens for AWS Well-Architected Framework



Your time is now
Build in-demand cloud skills your way



Thank you!

Abhishek Sarolia
Solutions Architect
AWS India

Dr. Vidur Mahajan
Chief Executive Officer
CARPL.AI



Please complete the
session survey