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Introducing Amazon Omics

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A deeper understanding of biology has the potential to transform how we treat disease – but the scale and complexity of this data can create challenges

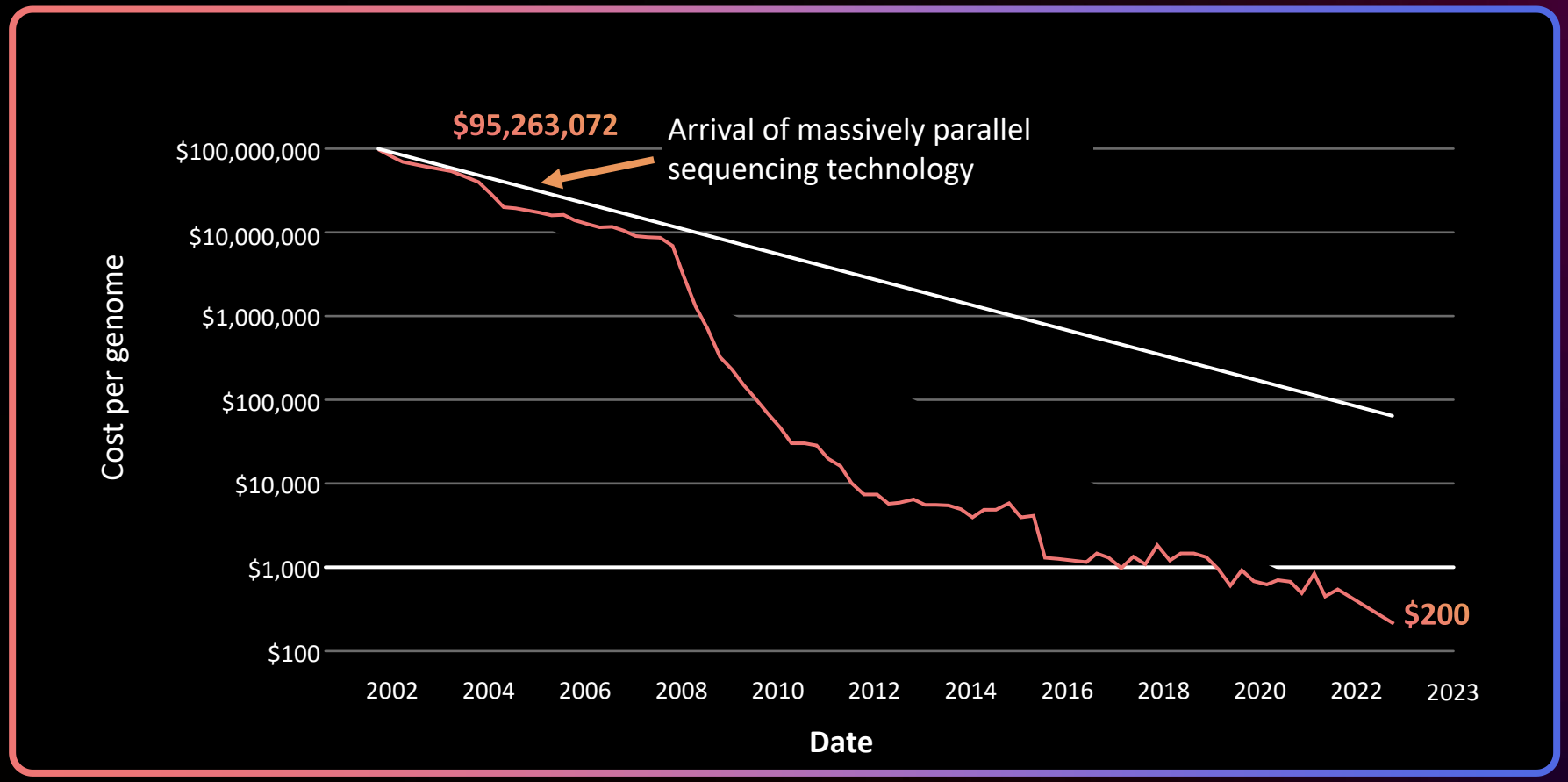
10s of millions of whole genomes sequenced and stored in the next five years

Requires multiple specialized tools and workflow languages

Need to combine numerous data modalities across silos

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Cost per human genome



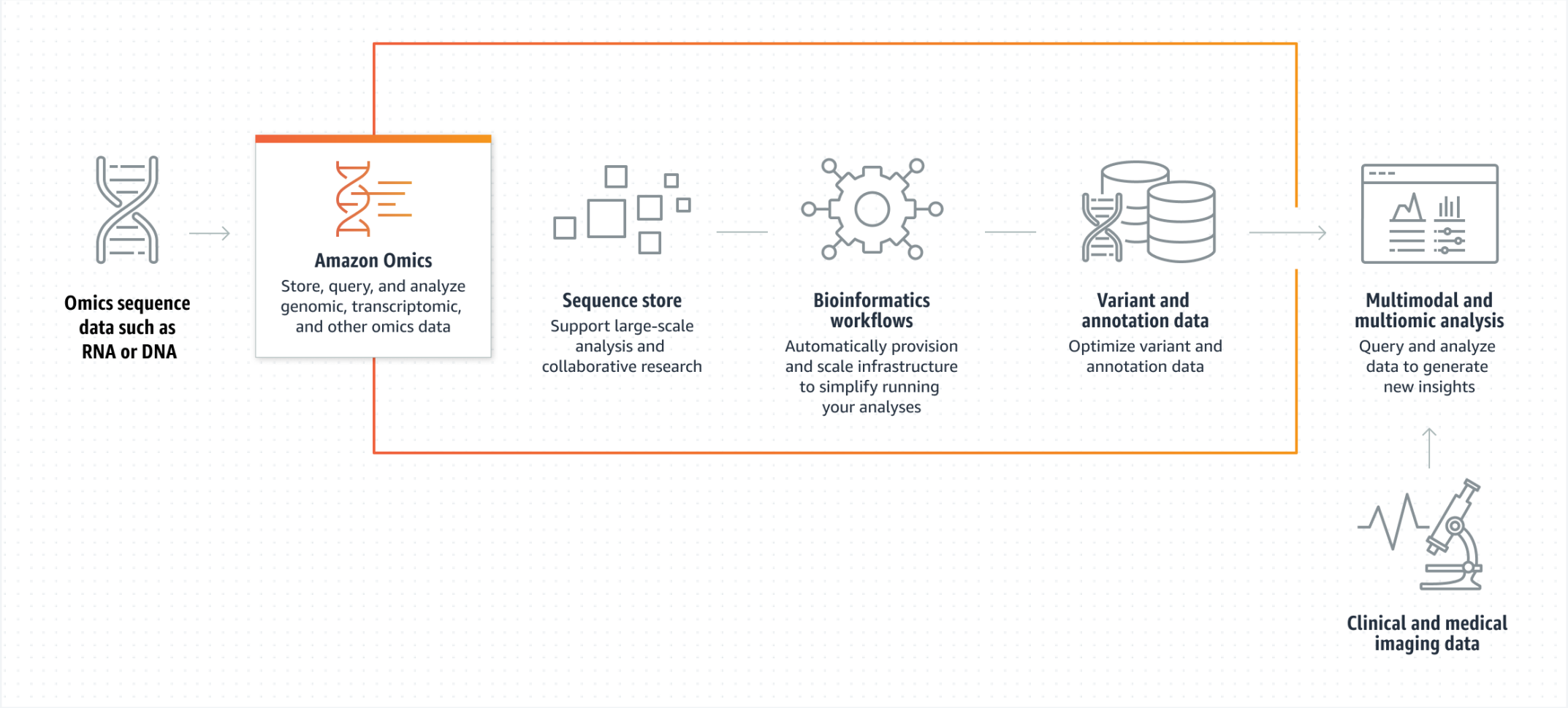
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Amazon Omics

A purpose-built service to help healthcare and life science organizations **store, query, and analyze** genomic, transcriptomic, and other omics data and then **generate insights** from that data to **improve health and accelerate scientific discoveries**

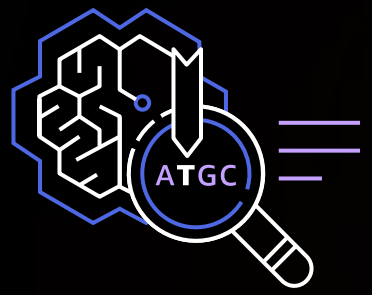
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Amazon Omics: How it Works



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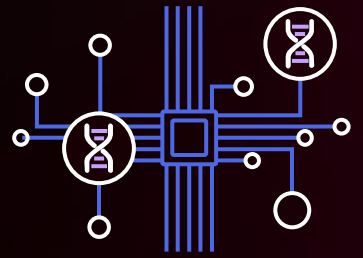
Amazon Omics: Benefits



Multiomic and multimodal analysis



Population-level scale



Fully-managed bioinformatics computation



Built-in security, privacy, and compliance

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Part of the Health AI service portfolio



Amazon Omics

Store, query, analyze, and generate insights from genomics and other omics data to improve human health



Amazon HealthLake

Imaging and analytics

Easily **store, share, and analyze** health data and medical images at petabyte scale



Amazon Comprehend Medical

Understand medical context with advanced text analytics using natural language processing



Amazon Transcribe Medical

Automatically convert **medical speech to text**

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Key service features

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Amazon Omics: Storage



Discover data

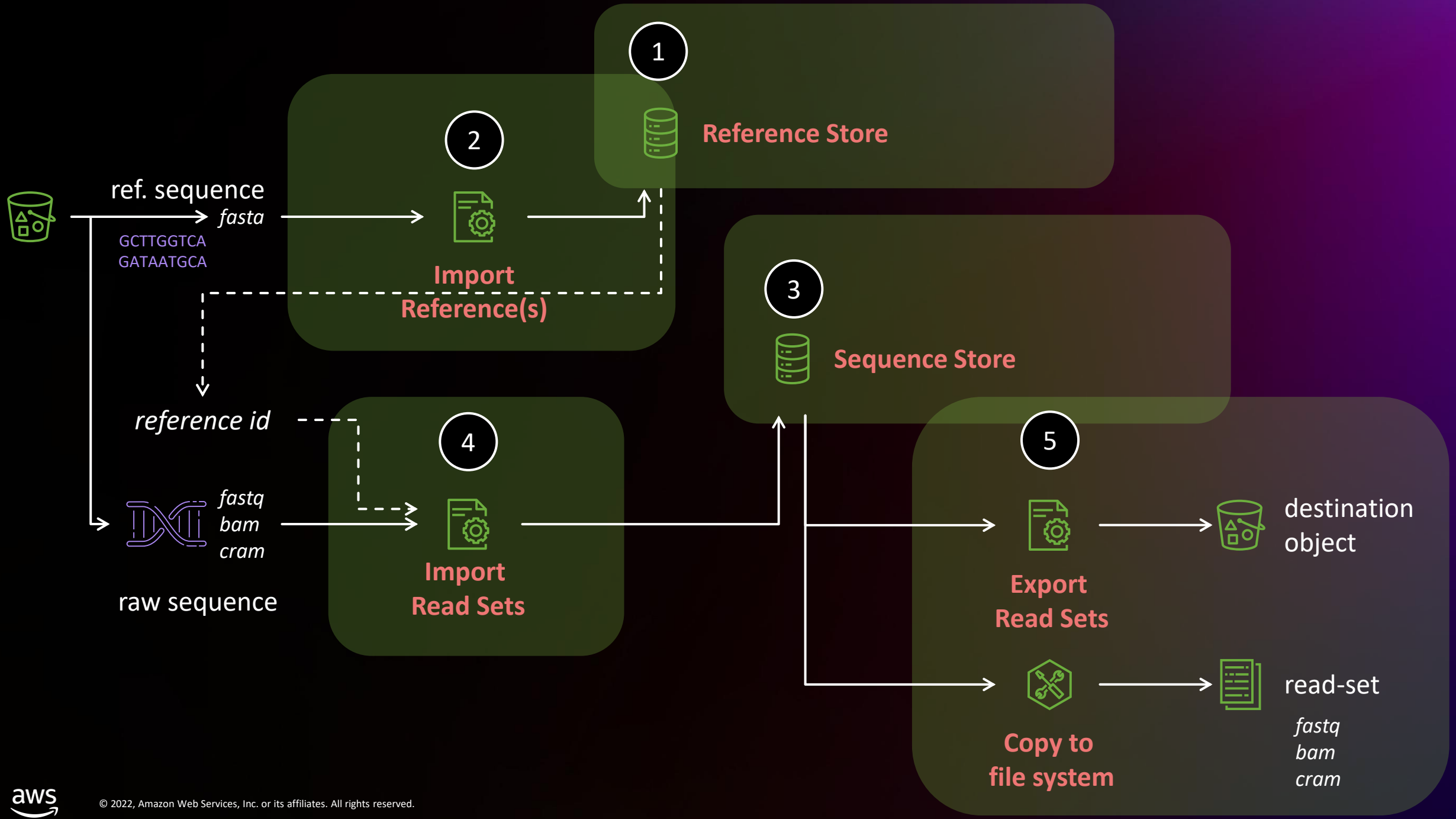


Share data



Low cost per gigabase

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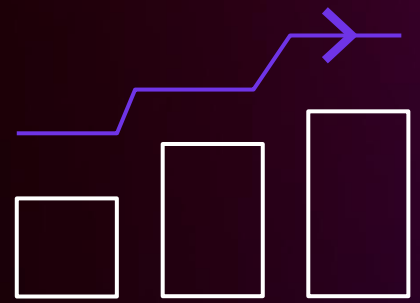
Amazon Omics: Analytics



Ingests variant and annotation data

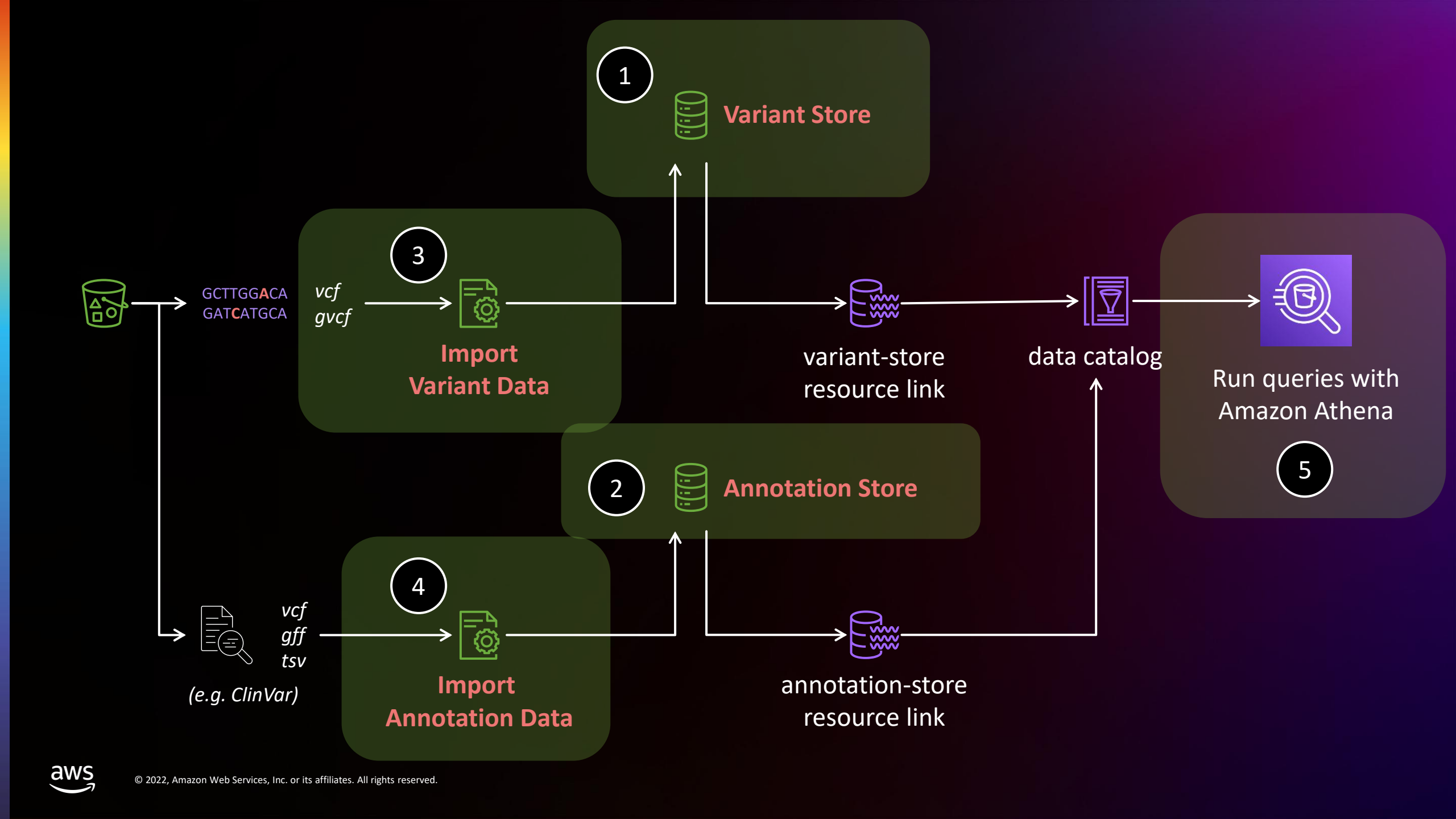


Allows fine-grained access control



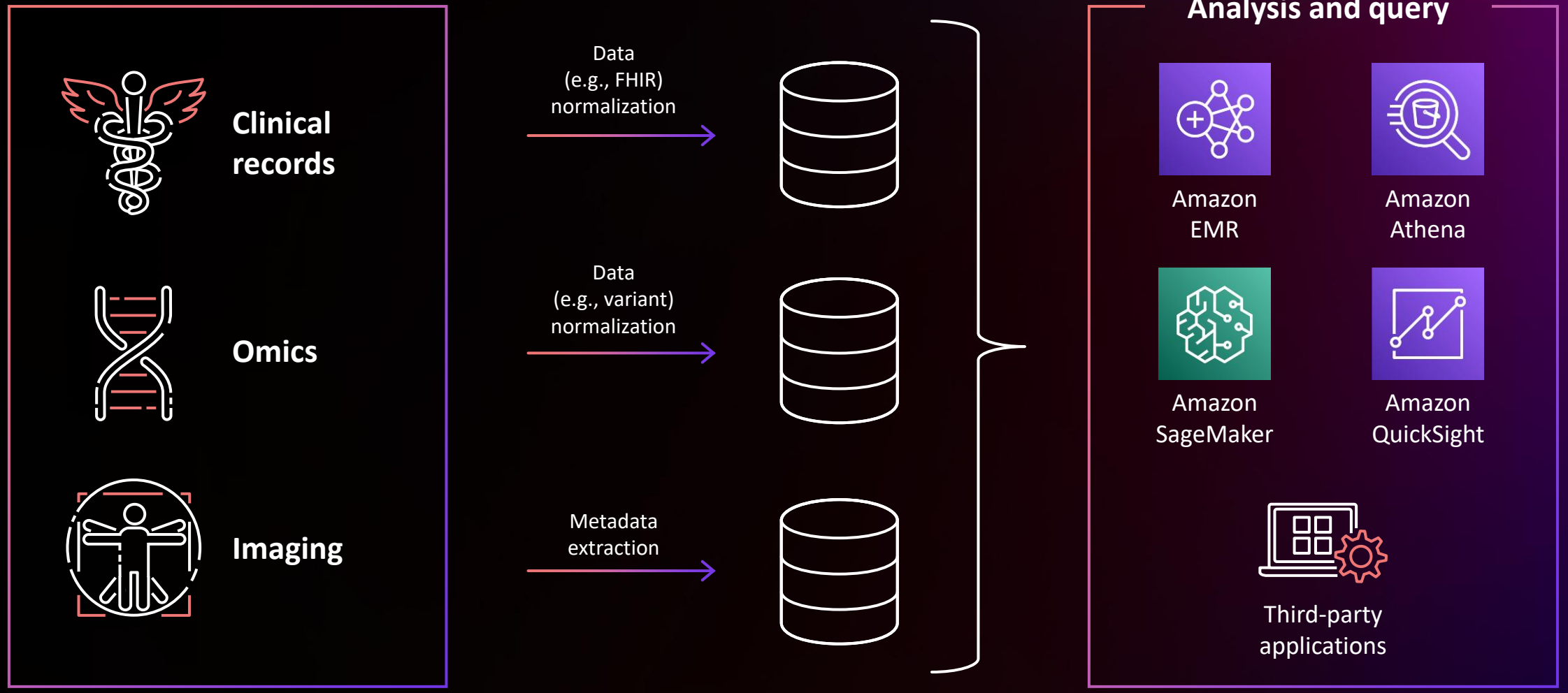
Scales with you

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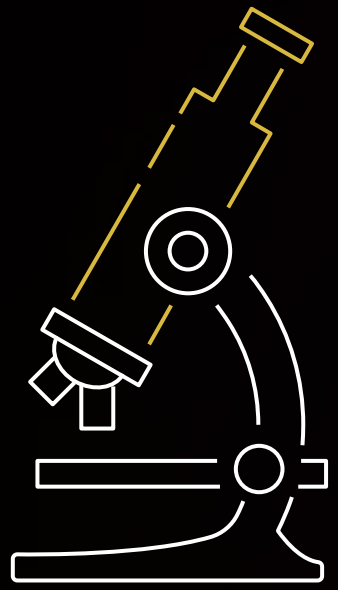
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Enabling multiomics and multimodal analyses

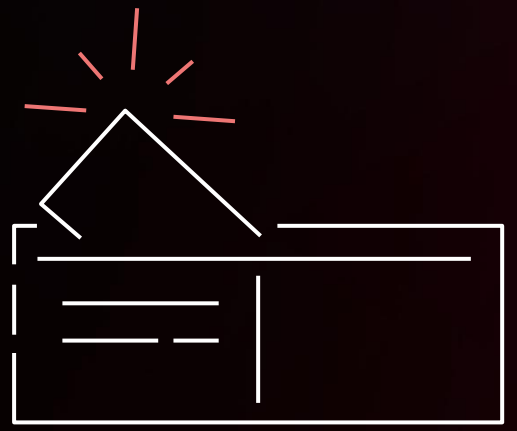


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Amazon Omics: Workflows



Science not infrastructure

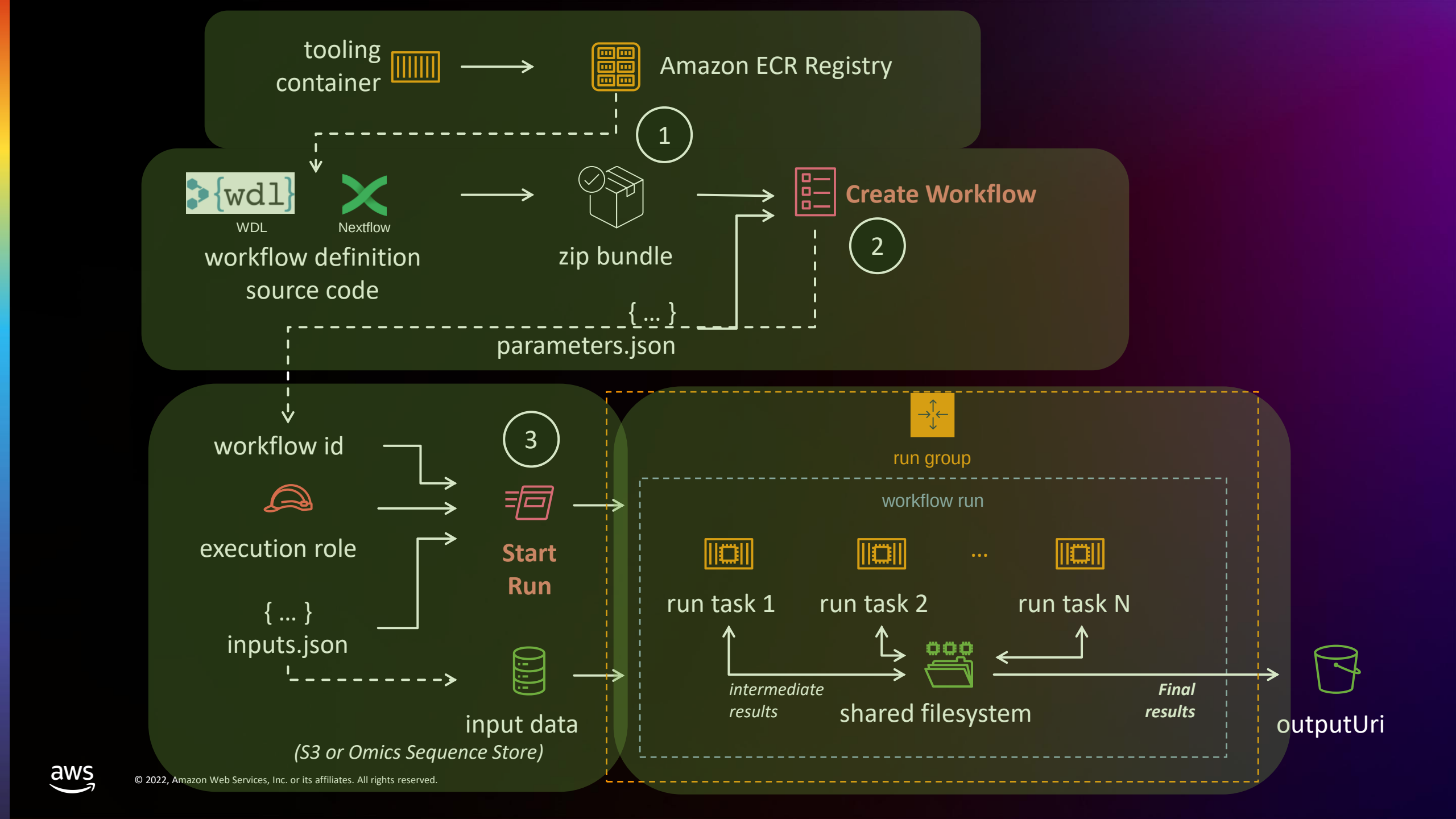


Pay-as-you-go pricing



Predictable cost per workflow

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End-to-end genomic data journey



store raw sequencing data

GCTTGGTCA
GATAATGCA *fasta*

ref. sequence

Reference Store

fastq
bam
cram

raw sequence

Sequence Store

run analysis workflows

{wdl}

Workflow Definition Language

Nextflow

Omics Workflow

store and query variant data

GCTTGGACA
GATCATGCA

variants

vcf
gvcf

Variant Store

annotations

vcf
gff
tsv

Annotation Store

query and interpret with Amazon Athena

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Use cases and customers

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Top use cases



Scale population sequencing

Understand how genomic variation maps to phenotypes across a population



Simplify clinical genomics workflows

Build reproducible and traceable clinical genomics workflows



Accelerate clinical trials

Integrate genome analysis into clinical trials to test new drug candidates' efficacy



Enhance research and innovation

Streamline and control storage, access, and analysis of anonymized genomic data

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Improve care delivery



"We know that getting a comprehensive view of our patients is crucial to delivering the best possible care, based on the most innovative research. Combining multiple clinical modalities is foundational to achieving this. With Amazon Omics, we can expand our understanding of our patients' health, all the way down to their DNA."

Jeff Pennington

Associate Vice President, Chief Research Informatics Officer,
The Children's Hospital of Philadelphia

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Accelerate growth



"Amazon Omics allows G42 to accelerate a competitive and deployable end-to-end service with globally leading data governance. We're able to leverage the extensive omics data management and bioinformatics solutions hosted globally on AWS, at our customers' fingertips. Our collaboration with AWS is much more than data – it's about value."

Ashish Koshy

CEO, G42 Healthcare

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Faster deployment



"Amazon Omics allows researchers to use tools and languages from their own domain, and considerably reduces the engineering maintenance effort while taking care of cost and resource allocation considerations, which in turn reduces time-to-market and NRE costs of new features and algorithmic improvements."

Ury Alon

VP Engineering, C2i Genomics

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Get started



Developer guide





Amazon Omics website



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Thank you!

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ajfriedm@amazon.com



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