RelevanceLab

Leading Health Sciences Institution Accelerates Secure Biomedical Research with Relevance Lab Research Gateway

Executive Summary

The leading Health Sciences Institution is a world-renowned research institution with a long history of scientific innovation and medical breakthroughs. Researchers across the leading Health Sciences Institution conduct leading-edge work in clinical research, biomedical informatics, disease prevention, medical imaging, precision medicine, and AI-driven healthcare innovation.

As research programs expanded and collaboration with external institutions increased, the leading Health Sciences Institution sought a secure and scalable platform that would enable researchers to access sensitive biomedical datasets while maintaining strict security, privacy, and regulatory compliance requirements.

To address this challenge, the leading Health Sciences Institution partnered with Relevance Lab to design and implement a Secure Research Environment (SRE) powered by the Research Gateway platform on AWS.

Business Challenges

The Academic Medical Center was launching collaborative research initiatives involving highly sensitive biomedical and healthcare datasets. These initiatives required secure access for researchers across multiple institutions while ensuring compliance with HIPAA and institutional governance requirements.

The organization needed a solution that could:

- Enable secure collaboration between internal and external researchers
- Protect sensitive research and patient-related data
- Support a wide range of research workloads, from statistical analysis to AI and machine learning
- Accelerate provisioning of compliant research environments
- Prevent unauthorized movement of data into and out of research environments
- Establish a repeatable framework for future research programs

Traditional approaches based on isolated on-premises infrastructure lacked the flexibility, scalability, and operational efficiency required to support growing research demands.

At a Glance

Industry
Higher Education & Academic Medical Center

Solution
Secure Research Environment (SRE)

Platform
Relevance Lab Research Gateway on AWS

Primary Goals
Secure Research Collaboration, Data Protection, Governance & Compliance

Research Areas
Biomedical Research, Clinical Analytics, AI/ML Research

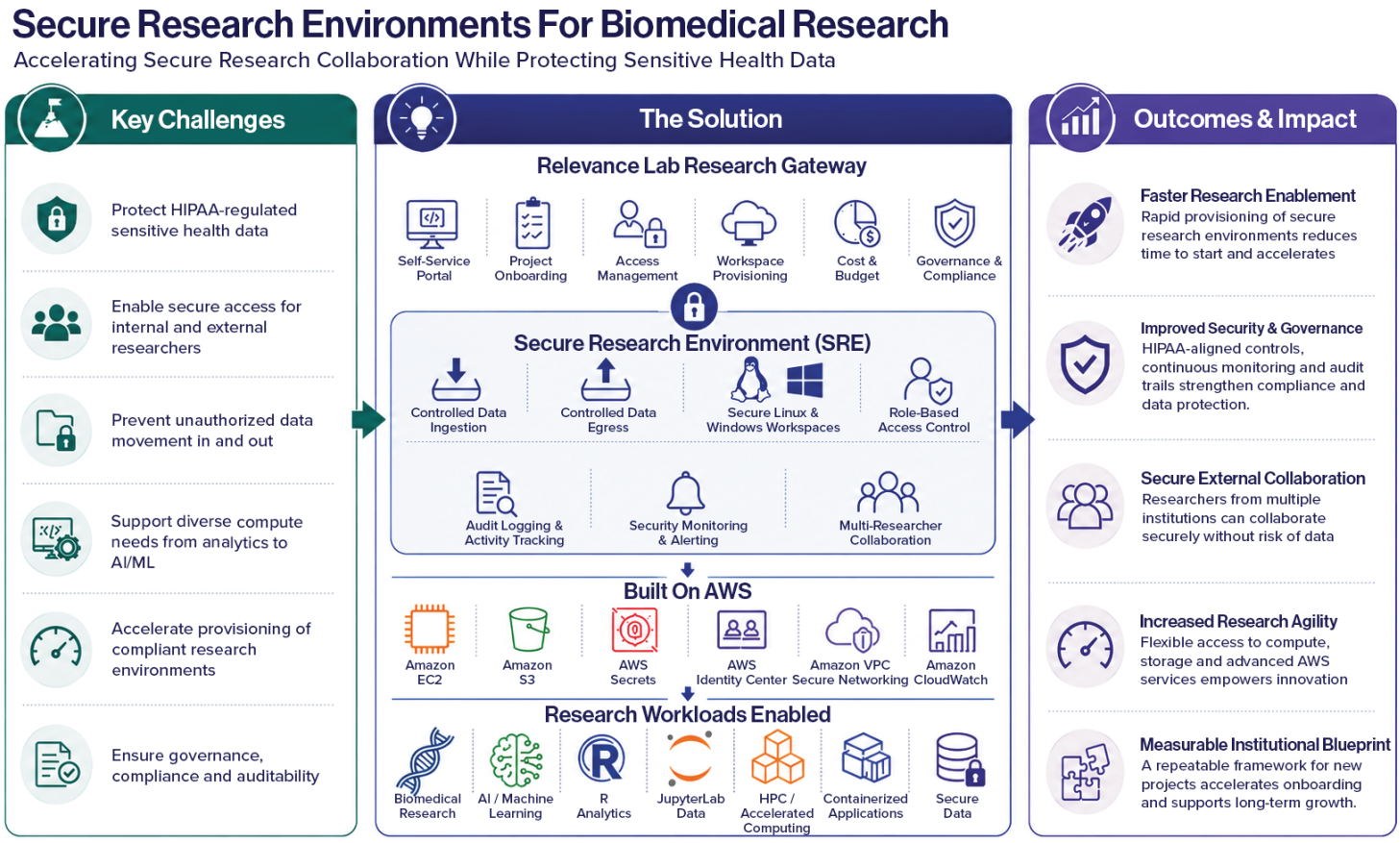
Key Capabilities
Secure Research Enclave, Controlled Data Ingress/Egress, Research Workspace Automation

Compliance Focus
HIPAA-Aligned Security Controls

Solution Overview

Relevance Lab partnered with the Academic Medical Center's Health Sciences leadership, IT, and institutional security teams to implement a cloud-native Secure Research Environment (SRE) powered by Research Gateway.

The resulting solution established a secure research enclave architecture where sensitive datasets could only enter or leave the environment through approved governance workflows. Researchers gained access to isolated project workspaces equipped with the tools and computing resources required for their studies, while administrators maintained centralized oversight and control.



Key Components

Research Gateway Platform

Research Gateway serves as the central control plane for managing secure research projects and provides:

- Self-service research project onboarding
- Secure workspace provisioning
- Role-based access management
- Budget and cost visibility
- Compliance and governance controls
- Automated environment deployment
- Operational reporting and monitoring

Secure Research Enclave

The Secure Research Environment incorporates:

- Controlled data ingress and egress workflows
- Segregated project environments
- Secure Linux and Windows research workspaces
- Federated authentication and role-based access
- Audit logging and activity tracking
- Security monitoring and compliance reporting

Flexible Research Infrastructure

The platform supports a broad range of research workloads including:

- Clinical and biomedical data analysis
- AI and machine learning research
- Statistical computing using RStudio
- Data science workflows using JupyterLab
- GPU-enabled research environments
- Containerized applications
- High-performance computing workloads
- Secure data repositories and data lakes

Research Workloads Enabled

The Secure Research Environment was designed to support multiple research groups with varying computational requirements.

Medical Imaging AI

- Secure HIPAA-controlled environment
- RStudio and JupyterLab workspaces
- Windows and Linux virtual desktops
- AI/ML workflows using SageMaker
- Biomedical data repositories

Research

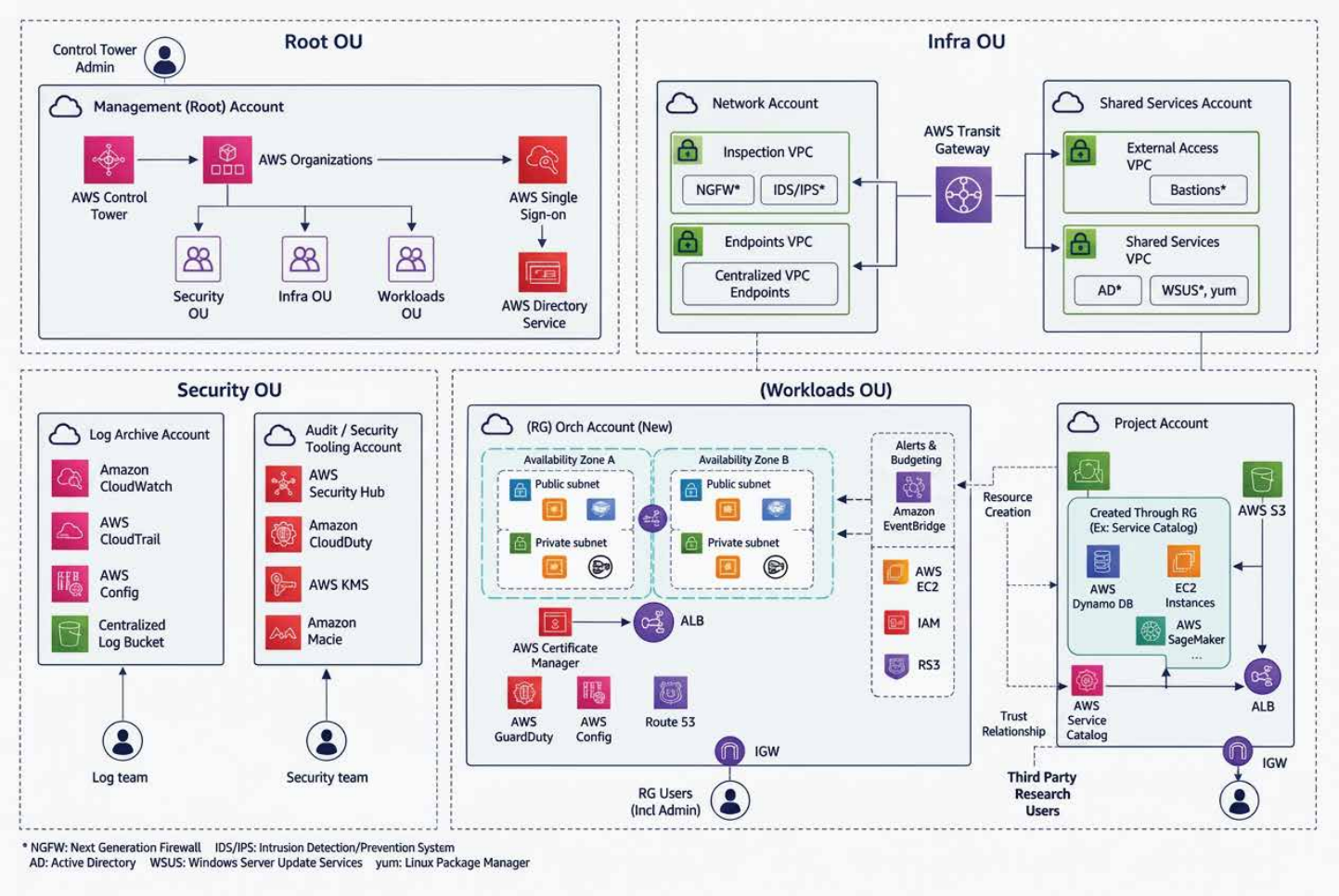
- Research computing workspaces
- Containerized applications
- RStudio and Jupyter-based analytics

Data Science & Analytics

- GPU-enabled research environments
- High-performance analytics workloads
- Advanced computational research applications

Architecture Highlights

The Secure Research Environment was designed around eight foundational principles.



Scalable Cloud Foundation

Relevance Lab implemented its Research Gateway Platform within the institution's AWS Landing Zone architecture to provide a secure, scalable, and self-service research computing environment.

The platform integrated centralized governance, secure data management, automated provisioning, and isolated project workspaces while maintaining institutional security controls.

Governance Foundation

- AWS Control Tower
- AWS Organizations
- AWS IAM Identity Center
- Multi-account architecture
- Centralized security and logging

Secure Research Workspaces

Researchers were provisioned isolated environments supporting:

- Linux and Windows desktops
- Remote desktop access
- Containerized workloads
- JupyterLab workspaces
- RStudio workspaces
- GPU-enabled computing environments
- AI/ML development platforms

Data Management Framework

- Shared research data repositories
- Project-specific storage
- Secure data ingress/egress workflows
- Controlled results-sharing process
- Research collaboration workspaces

Secure Data Ingress & Egress

All movement of research data into and out of the environment follows predefined approval workflows, ensuring complete governance and auditability.

Researcher-Centric Access

Researchers access secure virtual workspaces without requiring direct infrastructure access.

HIPAA-Aligned Security Controls

The environment incorporates controls designed to support sensitive biomedical and healthcare research.

Operational Governance

Automated monitoring, reporting, logging, and alerting provide continuous visibility into research operations.

Business Outcomes

Faster Research Enablement

Researchers can rapidly onboard new projects using standardized, pre-approved secure environments, reducing the time required to begin research activities.

Secure Multi-Institution Collaboration

The platform enables authorized researchers from multiple organizations to work with sensitive datasets while maintaining strict security controls.

Stronger Compliance & Governance

Centralized governance, monitoring, and controlled data workflows help the institution consistently manage sensitive research data and institutional compliance requirements.

Increased Research Agility

Researchers can leverage the compute, storage, analytics, and AI services they need without waiting for lengthy infrastructure provisioning cycles.

Reusable Blueprint for Future Research Programs

The Secure Research Environment established a repeatable framework that can be extended across departments and future research initiatives, accelerating onboarding while maintaining a consistent security and governance model.

Customer Perspective

"The Secure Research Environment developed with Relevance Lab provides a repeatable framework for enabling collaborative biomedical research while maintaining the rigorous security and compliance standards required for sensitive healthcare data. The platform gives our researchers the flexibility they need while providing the governance our institution requires."

— Health Sciences Leadership Team

Ready to Accelerate Secure Biomedical Research?

Relevance Lab Research Gateway helps research organizations deploy secure, governed research environments on AWS.

Let's discuss how you can:

- Rapidly deploy governed research environments
- Simplify cloud operations for research computing
- Protect sensitive research data throughout its lifecycle
- Accelerate scientific discovery while maintaining institutional and regulatory compliance

Learn More About Research Gateway

Recognized as a trusted AWS partner

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