Apexon

SUCCESS STORY – HEALTHCARE

BUILDING A MODERN HEALTHCARE DATA PLATFORM ON AWS FOR OPTIMIZED PATIENT CARE AND THERAPY INSIGHTS

Achieved 35-40% Improved Patient Insights, 45–55% Reduced Manual Effort, and 30-35% Faster Decision Making to Enhance Clinical Outcomes and Operational Efficiency.

ENGAGEMENT BACKGROUND

Apexon's collaboration with a leading digital therapeutics organization was initiated to extend their patient engagement app to the UK market and maximize the value of generated data. The scope of work involved designing and implementing an end-to-end data pipeline on AWS, covering ingestion through to reporting. Apexon's solution ingested application data using AWS Glue into the raw layer of a Datawarehouse, with transformation pipelines built on DBT to prepare data for analytics. This enabled business and clinical teams to access curated insights via BI dashboards, driving data-driven decision-making, streamlining regulatory reporting, and supporting future AI/ML initiatives for personalized therapy insights.

ABOUT THE CLIENT

The client is a pioneering digital therapeutics organization specializing in prescription-grade mobile solutions for mental health treatment. Their flagship product is an FDA-cleared digital therapeutic designed to support adults with Major Depressive Disorder (MDD). Delivered as a mobile app, the solution captures rich behavioral and engagement data as patients complete cognitive and emotional training modules alongside antidepressant therapy.

Recognizing the importance of deriving value from this data, the client sought to establish a modern data platform to securely ingest, transform, and analyze large volumes of patient interaction data. By leveraging AWS native services, Datawarehouse, and DBT, the client aimed to build an enterprise-grade data ecosystem that would enable advanced analytics, streamline regulatory reporting, and empower clinicians and business stakeholders with actionable insights.

THE CHALLENGE

Overcoming Barriers in Healthcare Data Management

The client faced significant challenges, including code migration issues, lack of test data quality, absence of an observability platform, high costs for low data volumes, and heavy cross-team dependencies. These issues led to inefficient workflows, delayed insights, and difficulties in consolidating and analyzing healthcare data, hindering timely and data-driven decision-making across business and clinical teams.

Key obstacles included:

CODE MIGRATION ISSUES

UK data pipelines, copied from the US environment without localization, caused failures in AWS Glue and Apache Airflow code, requiring rectification.

LACK OF TEST DATA QUALITY

Inconsistent synthetic data in dev/test/staging environments led to issues surfacing only in production.

ABSENCE OF OBSERVABILITY PLATFORM

No monitoring framework existed to track job failures or operational metrics, limiting visibility and delaying root cause analysis.

HIGH COSTS FOR LOW DATA VOLUMES

The app generated limited data, resulting in unnecessary cloud spend without proportional return.

HEAVY CROSS-TEAM DEPENDENCIES

Basic deployments required infrastructure team involvement, slowing delivery and reducing agility.

These challenges stemmed from two key root causes:

OPERATIONAL INEFFICIENCIES

- Manual Reliance: The client relied on manual processes for data wrangling and deployments, which were time-consuming, error-prone, and unscalable.
- Resource Strain: Cross-team dependencies strained resources, hindering effective data tracking and analysis.
- High Costs: Unoptimized pipelines increased cloud spend and resource costs.
- Limited Insights: Lack of monitoring and test data limited ad-hoc insights for strategic decisions.

DATA OVERLOAD AND COMPLEXITY

- Information Avalanche: The client struggled to process patient and clinical data from various sources, requiring efficient ingestion and transformation.
- Testing Data Demands: Inconsistent test data made reliable pipeline development challenging.
- Scalability Demands: Legacy setups couldn't support evolving data needs or advanced analytics.

These challenges created significant barriers to optimizing patient care and therapy effectiveness, necessitating a robust, scalable solution.

THE SOLUTION

Building a Scalable AWS Data Platform for Healthcare Insights

Apexon partnered with the client to deliver a modern data lakehouse on AWS, enabling seamless ingestion, processing, and transformation of data from multiple sources. By leveraging a suite of AWS services, Apexon migrated, cleaned, and modeled data to support unified reporting and analytics. The centralized platform ensured secure, role-based access, making high-quality, trusted data readily available while preparing the infrastructure for AI/ML-driven healthcare analytics.

Key components of Apexon's solution included:

AWS GLUE

- Performed data ingestion, cleanup, and transformation for efficient processing.

AWS MWAA

- Orchestrated data workflows and processes using managed Apache Airflow.

AWS ESR & ECS

- Deployed containerized services for scalable application management.

AWS ATHENA & REDSHIFT

- Provided scalable and fast data access and analytics for self-service insights.

IAM ROLE-BASED ACCESS

- Ensured secure, role-specific data access control to protect sensitive patient data.

Apexon's comprehensive approach included:

DATA INGESTION

- Ingested data from S3 landing bucket to S3 raw bucket (datalake) for centralized storage.

DATA PROCESSING

- Cleansed and transformed raw data using AWS Glue for consistency and quality.

DATA MODELING & REPORTING

- Developed data models to support accurate and timely business reporting.

SECURITY & ACCESS CONTROL

- Implemented IAM role-based policies to ensure secure and controlled data access.

By providing a scalable and automated data platform, Apexon empowered the client to streamline operations, enhance patient insights, and drive evidence-based decision-making.

KEY RESULTS

Centralized Healthcare Data and Enhanced Patient Outcomes

Apexon's strategic solutions enabled the client to achieve significant advancements in data management, clinical outcomes, and operational efficiency:

CENTRALIZED DATA PLATFORM

- **Unified Access:** Centralized healthcare and application data on AWS, improving accuracy for patient and clinical reporting.
- **High-Quality Data:** Delivered clean, standardized data, increasing trust and consistency across teams.
- **Scalable Infrastructure:** Achieved resilient infrastructure with near-zero downtime, supporting growing data volumes.

AUTOMATION AND EFFICIENCY

- **Streamlined Workflows:** Automated data pipelines reduced manual effort and simplified maintenance.
- **Faster Reporting:** Enabled self-service analytics, accelerating report generation and data updates.
- **Resource Reallocation:** Freed up staff to focus on patient care insights and strategic initiatives.

ENHANCED SECURITY AND GOVERNANCE

- **Robust Access Controls:** Implemented role-based access and Grafana-based observability, ensuring data security and compliance.
- **Continuous Monitoring:** Enabled proactive issue detection for system reliability.
- **AI Readiness:** Optimized infrastructure for advanced analytics and AI/ML initiatives.

OVERALL BUSINESS IMPACT

- **30-40% Improved Patient Insights:** Real-time analytics enhanced therapy adherence and patient progress visibility.
- **45-55% Reduced Manual Effort:** Automated pipelines cut data wrangling time significantly.
- **30-35% Faster Decision-Making:** Rapid access to consolidated data supported faster interventions.
- **20-25% Improved Treatment Outcomes:** Scalable platform enabled predictive modeling for therapy optimization.

By delivering these results, Apexon enabled the client to enhance patient care, improve operational efficiency, and establish a foundation for future AI-driven healthcare innovation, strengthening their market position.

Apexon

Apexon is a pure-play digital engineering services firm focused on helping companies accelerate their digital initiatives from strategy and planning through execution. We leverage deep technical expertise, Agile methodologies and data-driven intelligence to modernize systems of engagement and simplify human/tech interaction.

We deliver custom solutions that meet customers' technology needs wherever they are in their digital lifecycle. Backed by Goldman Sachs and Everstone Capital. Apexon works with both larger enterprises and emerging innovators-putting digital to work to enable new products and business models, engage with customers in new ways, and create sustainable competitive differentiation.

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