

# Healthcare system transforms its data infrastructure

**Industry**  
Healthcare

## Technologies

- Google BigQuery
- Google Dataflow
- Google Cloud IAM
- Google Cloud Storage (GCS)
- Oracle
- Cloudera (Hadoop)
- HashiCorp Terraform/Gruntwork Terragrunt
- Microsoft SQL Server
- GCP Airflow/Cloud Composer
- Google Dataproc
- Google Cloud SQL
- Google Pub/Sub
- Google Secret Manager
- Google Key Management (KMS)
- Google Cloud Functions
- Jenkins

## Data Products

- PeopleSoft
- Salesforce
- Patient data (encounter/experience), Clinical data
- 3M
- SG2
- Symedical
- NPPES/Taxonomy
- Athena
- Employee data
- Financial data

## Modern cloud platform improves data access, speed, and costs

With electronic medical records, virtual visits and online billing, healthcare now revolves around data. That makes a modern, scalable data infrastructure an essential tool.

Pythian teamed up with Google Cloud's professional services organization to help a national US healthcare system fast-track their migration from both Cloudera and Oracle to Google Cloud. This high visibility project was far more than a simple "lift and shift"—it was a true transformation. The healthcare system established a solid foundation for the future with new architecture, best-in-class technology and sound partnerships.

Now, professionals across the healthcare client's 19-state footprint have stronger data insights, faster speed and more reliable performance. The IT team enjoys significant efficiencies and cost savings thanks to the move to cloud operations.

## Challenges

### Siloed data sets and poor performance

In the previous Oracle platform, users struggled to obtain current information; many reports used month-old data. The system lacked the capacity to execute large or complex queries. Siloed data made truly global insights impossible.

### Unyielding project deadlines

The scope of the Google Cloud migration and its aggressive timeline threatened to overwhelm the small in-house team. They worried about keeping progress on track.

### Limited Google Cloud experience

The organization realized cloud architecture and operations were far different than on-premise equivalents. The internal team needed help understanding and optimizing Google Cloud's capabilities.

## Solutions

### A comprehensive migration plan

Meeting the aggressive deadline required dividing the project into manageable tasks and staying organized. Pythian drew on our extensive experience to recommend the right approach.

### Agile project management

The healthcare system used Waterfall methodologies for most projects but realized Agile was better suited to their migration. Pythian's project manager acted as Scrum Master.

### Mentoring, training, and best practices

The entire Pythian team focused on hands-on education to help the internal team get up to speed quickly on Google Cloud and Agile.

## Facing an aggressive deadline with limited Google Cloud experience

An aging, on-premise system prompted the healthcare client to undertake this massive migration project. After years of struggling with the limitations of their Oracle platform and Cloudera Hadoop framework, they moved forward with Google Cloud and BigQuery. The data engineering team rewrote all data processing pipelines—which used to be in PySpark running on Cloudera—to better-performing Dataflow jobs, using Java.

Outside expertise was a must. The data engineering team lacked sufficient experience in both cloud operations and the details of Google Cloud. The scope of the project was daunting. The organization needed to design their new architecture, then migrate more than 70 data sets. The data included clinical, financial and operational information spanning 11 million patients and 50 million encounters.

Timing presented a second challenge. With their Oracle contract coming up for renewal, senior leaders needed the project finished before that deadline. Pythian stepped in with the clock ticking and just seven months remaining.

## Pythian delivers modern architecture and an Agile approach

With only a few months and much work to be done, a thoughtful plan and efficient use of resources was a must. Pythian jumped in with two teams of dedicated resources. One group focused on solution architecture, using Google Dataflow. The other led project management with Agile methodologies.

While working virtually because of the COVID-19 pandemic, we embedded our Pythian team as much as possible within the healthcare system's IT team. A core part of the engagement was sharing Pythian's years of expertise with the internal staff, who were new to cloud operations. Through weekly lunch-and-learns, informal training and Q&A sessions, we helped the in-house team increase their knowledge and confidence about Google Cloud.

## Results

### Current, accurate data access

Data now updates daily, rather than monthly, and easily spans all available data sets; silos are a thing of the past.

### Agile project management

Google Cloud's scalable infrastructure provides ready capacity for even the most robust queries. Response times on most inquiries are up to 50 times faster than with the previous Oracle system.

### Cost-effective cloud operations

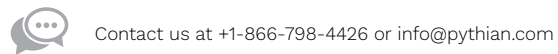
The healthcare system has eliminated capital expenses for servers and significantly reduced their ongoing costs.

## Cloud move brings stronger insights and 25 to 50 times faster responses

Our hands-on and collaborative approach paid off. The healthcare system successfully met their cutover deadline. The new Google Cloud environment makes it faster and easier for users to make data-driven decisions, particularly when it comes to understanding the health of the communities they serve.

Data now updates daily, rather than monthly, providing far more accurate and timely insights. Response times are 25 to 50 times faster than in their previous Oracle system. Users also have a consistent interface for all dashboards, making it simpler to find information.

The IT team continues to gain proficiency in Google Cloud, with Pythian serving as a resource for more sophisticated activities. Stakeholders are pleased with the results and already making plans to leverage advanced statistical modeling capabilities to enhance their business intelligence efforts.



## ABOUT PYTHIAN

Founded in 1997, Pythian is a global IT services company that helps organizations transform how they compete and win by helping them turn data into valuable insights, predictions and products. From cloud automation to machine learning, Pythian designs, implements and supports customized solutions to the toughest data challenges.

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