

Accelerating Healthcare's Digital Transformation with Cloud-Based APIs

The digital transformation in healthcare is continually evolving. To keep it moving forward, healthcare organizations now need to overcome a variety of challenges associated with using data, according to Ilia Tulchinsky, Engineering Director at Google Cloud, Healthcare and Life Sciences.

Healthcare organizations have already moved away from paper and have built a digital foundation with data stores. They now are looking to build application portfolios with application programming interfaces (APIs) and create hyper-personalized mobile experiences. And, in the future, the healthcare industry will build an ecosystem democratizing innovation and leverage artificial intelligence to enhance workflows and experiences.

To accomplish all of this, healthcare organizations need to focus on developing applications that can easily leverage data; building an ecosystem of connected services that are capable of working with data; and creating a gateway into modern analytics and machine learning.

To support these use cases, healthcare organizations need to rely on a platform that offers:

- A health-grade infrastructure that is secure, compliant, reliable and low-cost
- Interoperability that makes it possible to share data both within and between organizations
- Actionable insights that are integrated into the workflow and support innovation and research

Arriving at these insights is “sometimes as simple as creating a dashboard ... with the data joined from multiple sources,” Tulchinsky said. At other times, however, it can be more complicated and require acquiring data from multiple systems, formats and capabilities; translating this data via preconfigured and customizable standards such as FHIR, HL7 and custom ETL; and creating a canonical layer of data, or a “single source of truth.”



API bridge

The Cloud Healthcare API, a managed solution for storing and accessing healthcare data in the Google Cloud Platform, can help in this endeavor. The API provides a critical bridge between existing care systems and applications hosted on Google Cloud. By using this API, it is possible to unlock significant new capabilities for data analysis, machine learning and application development.

The healthcare industry has many systems of records that will continue to produce data. At the same time, data is emanating from other sources, such as mobile devices. As a result, organizations can expect to deal with data from heterogeneous sources.

“The point is not to just store all of your data in one place; the point is to create a faster, more canonical data layer with the right standards, the right coding for the data, and enable it with the API so that you can build services on top of that. That’s where you can get faster innovation and bring insights into healthcare organizations,” Tulchinsky said.

The Cloud Healthcare API not only creates a storage layer, but it also acts “as a gateway into modern analytics and machine learning. So, it’s also a bridge between the naked data format and the right format for analytics solutions,” he said.



API example

Tulchinsky offered an example illustrating how the API and its machine-learning and analytic tools could be used to create an innovative app that predicts if patients need immunizations when traveling internationally. “As a user, you can come in, and say you’re traveling to a certain country, and the app knows your previous immunizations, it knows where you’re supposed to go, and then it tells you if you need to be immunized or not,” he said.

To build this app, data is generated, stored in the Cloud Healthcare API and exported to BigQuery, a highly scalable, cost-effective and fully managed cloud data warehouse for analytics. A machine-learning engine is then used to train a predictive model, which is used in the app.

Here’s how it all works:

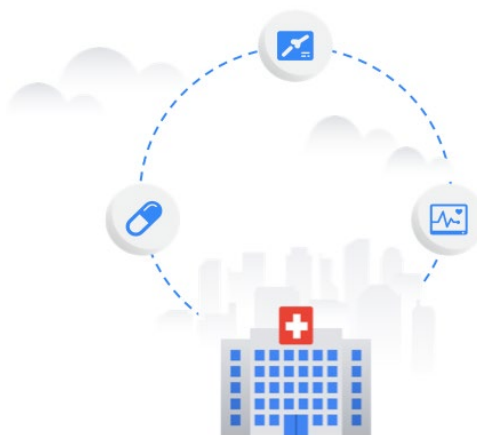
1. The app receives the patient data and then gets the data about the patient’s upcoming travel as a question-and-response FHIR resource.
2. A pop-up indicates that the patient is planning to travel to another country. This evokes the machine learning model, which then produces a prediction, which is presented as a risk-assessment result.
3. The risk-assessment result is then sent back to the healthcare API application, which reads it and displays it on the screen, informing the patient of what immunizations are required, if any.



Future use cases

This is just one example illustrating how the Cloud Healthcare API can help support innovation, thereby keeping the digital healthcare journey moving forward.

“Where we see our value, in general, is in simplifying these problems associated with scale, performance and compliance,” said Tulchinsky. “We want to build a platform that makes it easy” for healthcare developers and organizations to build “transformative intelligence and applications” that will ultimately help patients get better care, he concluded.



For more information visit the healthcare website:

<https://cloud.google.com/solutions/healthcare/>