



CASE STUDY

ADVANTAGE ENGLAND: WILL DATA ANALYTICS HELP BRING HOME A TROPHY?

How Google Cloud Platform supports The FA's Helix data analytics applications



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It will take a lot more than technology to win England either the UEFA Women's Euros or the FIFA Men's World Cup this year.

But The FA's partnership with Google Cloud is at least giving its coaches and performance staff access to the data and processing muscle that will help it select the best squad available at any one time.

The FA's Player Performance System (PPS) is a central component of an application and development suite – Helix – developed by The FA which has been hosted on the Google Cloud Platform (GCP) for the last five years. Used by the Technical Directorate staff associated with both the England men's and women's football teams, Helix provides them with secure access to databases, processes, functions and compute resources that combine to analyse large volumes of data pulled from different sources. It also integrates with visualisation tools that provide coaches and performance staff with multiple views of various data mash ups to provide unique insights customised to end users requirements.

The platform relies on various GCP tools, glued together by a complex microservice system which is used to update the data being collected, analysed and stored.

That data can include anything from player profiles, scout reports, medical information, club/international fixtures and results and research material to metrics pulled from wearable devices which track training volume and intensity to give coaches a better idea of players exposure and to manage their workload. Coaches also have access to players' sleep, nutrition, recovery and mental health data.

"What it allows our users to do is pull together disparate bits of information that they may not be used to seeing side by side to generate new insights, and hopefully give us an edge when it comes to competitions," said Craig Donald, CIO at The FA.

HELIX PROVIDES MULTI-DIMENSIONAL INSIGHT

Helix tracks more than 3,500 professional footballers, and stores over 22m player data points collected from competitive games and training sessions. It also supports third-party software like performance analysis app Hudl and SaaS-based sports coaching platform Academy Soccer Coach. All of them can be accessed via Helix using single sign on (SSO) credentials authorised by The FA itself.

The platform relies on various GCP tools, glued together by a complex microservice system which is used to update the data being collected, analysed and stored. Middleware components include Pub/Sub, Functions, Tasks, Scheduler, Workflows, Logging and Alerting/Monitoring, while Google Analytics tracks end user activity.

3,500+

professional footballers
being tracked

22m+

player data points
collected from games
and training sessions

400

videos per day of competitive
games fed into The FA database

40TB

processed per week

The tracking data is a computationally heavy process because it needs to be cleaned, smoothed and have external information applied to it before its value can be realised.

Cloud Storage is used to host The FA's video archives of competitive games. As many as 400 a day make their way into The FA database, each one creating up to a 5GB file size and 600MB of video tracking data. In addition, a Google Compute instance supplemented by Cloud Run houses the Kubernetes containers which provide video streaming capabilities.

DataStream is used to detect changes in The FA's SQL database and trigger an update in the BigQuery data warehouse. The FA's Data Architect finds BigQuery is particularly helpful in that it allows him to perform substantial and complex queries when tracking data and joining multiple sources together using its Machine Learning, Regression, Clustering and Autoencoder functions.

"We've applied ML techniques such as clustering to tactical analysis with great success" said The FA's Data Architect. "Tracking data is a very complex data structure and using BigQuery ML and Autoencoder allows us to simplify the process within various applications and use cases."

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The tracking data is a computationally heavy process because it needs to be cleaned, smoothed and have external information applied to it before its value can be realised. The FA handles it using Google Cloud Run, a managed compute platform able to automatically scale its Kubernetes containers to accommodate greater capacity when required.



The FA also uses Tableau's visual analytics platform to provide staff with intuitive, graphical representations of the data being processed by Google Analytics, with a simple integration and authentication process providing them with access to a library of pre-built charts, custom reports and dashboards.

INFRASTRUCTURE PERFORMANCE GAINS

The success of the project is already assured considering that The FA has given itself faster, more convenient access to the data and greater insight into player and team performance which can aid selection and the England teams' choice of tactics in any given fixture. Meanwhile, the storage and CPU muscle provided by GCP has also ironed out Helix' own performance issues.

The additional power and capacity of the GCP hosting infrastructure should help The FA quickly and cost effectively scale up its analytics capabilities to handle additional data sets during forthcoming competitions. Both the UEFA Women's Euros being held in England this July, followed by the FIFA Men's World Cup in Qatar in November/December, will also see The FA use Player Wellness and Exposure applications to manage and monitor players in camp during the tournament.

It often seems in football that everybody has their own idea of the best players to pick and the tactics to adopt. But the combination of granular data metrics and cloud architecture deployed by The FA and Google Cloud might actually give a genuine expert the knowledge to back up those opinions.

Sponsored by Google Cloud.