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Cloud Architecture and Implementation of AWS Solution

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About the Client

Healthcare startup that develops personalized optimization treatments to individuals and athletes based on personal biomarkers data.The client is one of the fastest growing companies in the bio-markers health-tech industry.

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Challenges:

Client's applications had a number of complex backend requirements:

- **Big Data:** due to the high volume of data, it required big data architecture components, such as a Data Lake for storage and real-time data processing.
- **Scalability:** the infrastructure had to support computation for a large number of customers while ensuring reasonable costs for them as a start-up.
- **Security:** store and compute client personal data, it required a secure infrastructure with HIPAA and HDS compliance.
- **Interoperability:** as some of its services had to be working with 3rd party API's, the architecture had to be built with high interoperability in mind.
- **Artificial Intelligence:** The Machine Learning and algorithms play a big role in the value proposition, as customers expect to extract value from using the the service.

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The Solution

Technologies used:

- **Amazon Web Services (AWS)**
- **DevSecOps**
- **Python**
- **Big Data**
- **Serverless**

We recommended AWS, because of its compliance with all the requirements, its competitive cost, and and its capacity to support innovation.

AWS architecture is based on a model of hybrid serverless and containers, leveraging the specialised services: Lambda, Fargate, API Gateway, Cognito, Firehose, Lake Formation, SageMaker, SQS, WAF, Application Load Balancers, S3, ElasticSearch, CodePipeline, CodeBuild, CodeCommit, CodeDeploy, CloudWatch, Certificate Manager, Web Application Firewall, CloudFront.

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The Result

- enhanced security for customer personal data
- cost-efficient scalability during peak computation
- ability to host and process in real time huge amount of data
- improved inter-operability with 3rd part API's

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