FUJITSU

Madrid Health Ministry

Personalized healthcare for everybody

Genomic data is critical for the future of healthcare. AI/ML analysis promises to create a truly personalized view of health based on the unique DNA of an individual. The Madrid Health Ministry and Fujitsu are co-creating a solution with the potential to be truly groundbreaking.

Challenge

Connecting and updating secure data from distributed sources while using the power of AI/ML to identify genes associated with a particular disease.

Solution

Combining the entire process of genomic studies of an individual on a single platform to make treating genetic diseases faster, better, and personalized.

Outcomes

- Early diagnosis and AI-suggested treatments for genetically based diseases
- Systemic improvement through knowledge sharing and standardization

"We can build a future where everyone leads a better life as they see a personalized view of their own health."

Professor Pablo Lapunzina, Scientific Director of CIBERER and Head of the INGEMM-IdiPAZ Research Group

Making genomic analysis a reality

Imagine a treatment that is created for you and only you. It is created for you based on your unique genetic disposition and could stop you getting Parkinson's, Alzheimer's and many other common diseases. This hyper-personalized approach to medicine remains a dream, but the Madrid Health Ministry has taken society a step closer to realizing this possibility by launching an ambitious project that aims to provide a single platform for integrated genetic services in Spain for the first time.

Genome-wide association studies help scientists identify genes associated with a particular disease or another trait. This method studies the entire set of DNA (the genome) of a large group of people, searching for small variations. MEDIGENOMICS is the attempt to combine the entire process of genomic studies of an individual on a single platform in a simple and automated way.

The aim is to optimize the overall process of genetic diagnosis for the patient/citizen, improve diagnostic tools for genetic diseases, and enhance the information available to health administrations. It has the potential to vastly improve the early diagnosis of genetically based diseases and suggest more effective treatments.

But integrating disparate health data from distributed sources can be slow, expensive and frustrating. Furthermore, data silos in hospitals and health systems pose significant challenges to efficient decision-making in pharma and public health.

Working together to break new ground

Fujitsu, in partnership with genomic experts Vocali, GenomCore, and ZettaGenomics, developed a solution leveraging analytics and Artificial Intelligence. "Our challenge was to build a platform that integrated all genomic analysis and clinical data. We awarded the contract to Fujitsu for the development of Medigenomics following all the legislation for public procurement in our region. It was very objective and competitive, and Fujitsu offered a solution that no one else could," explains Dr. Ana Miquel, Head of Healthcare Innovation and International Projects, Ministry of Health, Community of Madrid.

Any individual can have up to 50,000 genomic variants and there is a need to classify these variants quickly to find the top five to ten that will have the most consequences in the health of a person. This requires a vast amount of computing power, but Machine Learning can determine whether an identified variant is clinically relevant, and what health actions, if any, should be implemented.

The solution enables the analysis of vast amounts of data, kept in a secure database, but still easily monitored and managed, and integrated into an Electronic Health Record (EHR). This access to objective data has a huge impact on evidence-based decision making. When faced with a genomic variant, and because the opinions of individual experts vary considerably from one to another, there is a compelling need for findings to be evaluated in an impartial, up-to-date manner and with data from multiple, self-updating databases.

Industry:
Health care

Location:
Spain

About the customer

Madrid Health Ministry is the administrative and management structure that integrates every public hospital and every public health service.
At a scientific level, the organization has a total of 47 research groups, structured in 8 major scientific areas.

1x
unified platform for genomic analysis

Personalized individual treatments at scale

The connected approach provides transparent and accountable insights to the people who need them most. Clinicians get better insights and less wasted time, patients get more personalized treatments, and the whole system becomes more efficient as health providers get better at sharing and standardizing knowledge.

"We now have the tools to predict the risks for common diseases, like Parkinson's, or Alzheimer's, or for coronary artery disease," explains Professor Pablo Lapunzina, Scientific Director of CIBERER and Head of the INGEMM-IdiPAZ Research Group. "The healthy population now have the possibility to know about their own risks."

Individual treatment optimization suddenly becomes an achievable goal, and this approach has even greater power when applied at organizational scale. The refined standardization and integration of genomic information into a centralized system within a health system (regional, national, or supranational) holds the promise of treating more people, with fewer resources, at scale.

"In my opinion the future is genetics for all, not only those who have a known genetic problem but for people currently healthy as well. Genomic technology can prevent the risk of getting many common diseases. We can build a future where everyone leads a better life as they see a personalized view of their own health," concludes Professor Pablo Lapunzina.

Customer:

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