UNIVERSIDAD DISTRITAL
FRANCISCO JOSÉ DE CALDAS

Functional and No Functional Requirements

Databases II

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Functional Requirements

Number	Requirement	Description	Priority
FR1	User registration	Allow registration of farmers, technicians and managers via email or federated authentication (Google, Microsoft).	High
FR2	Authentication and roles	Provide secure login with role-based access control to customize visible functionality based on user type.	High
FR3	Continuous data ingestion	Integrate data from open weather sources in real time using tools such as Kafka or AWS Kinesis.	High
FR4	Distributed storage	Store weather and agricultural data on a distributed, globally accessible basis with minimal latency.	High
FR5	Weather data queries	Allow users to visualize real-time and historical information about weather conditions in their area.	High
FR6	Predictive analytics	Run machine learning models to predict climate risks such as drought, frost or heavy rainfall.	High
FR7	Customized recommendations	Issue intelligent suggestions for planting, irrigation or fertilization based on microclimates and analyzed data.	Media
FR8	Report generation	Produce customized reports for agricultural and governmental decision makers.	Media
FR9	Administrative panel	Enable user managemen general system statistics by the administrator.	High

No Functional Requirements

Number	Requirement	Description	Priority
NFR1	Performance	Process queries with a maximum latency of 5 seconds for weather searches and predictions in agricultural areas.	High

NFR2	Horizontal scalability	Allow adding nodes to handle large volumes of data and increase the number of concurrent users.	High
NFR3	High availability	Guarantee 99.9% uptime with failover and automatic failover mechanisms.	High
NFR4	Multi-location access	Allow access from multiple geographic regions with minimal load times through the use of CDNs or distributed clusters.	Media
NFR5	Interoperability	Integrate with third-party APIs such as OpenWeather and Copernicus, as well as IoT devices using standard protocols.	Media
NFR6	Usability	Design a responsive, intuitive and fast web interface, accessible from different devices with low response times.	Media
NFR7	Maintainability	Have a modular and well-documented architecture that facilitates system upgrades, corrections and scaling.	Media