CASE STUDY

RIO 4.0 – Rionegro Smart City

Challenge

Design a smart city model according to the vocations and services of Rionegro to promote it as an innovative and sustainable city. Train and empower citizens and government officials.

Client: Rionegro Mayor's office

City of Rionegro – Colombia
December 2020

"The smart thing is to focus on a path that empowers us, to have technology at the service of people and that all this gives us an admired place not only in Colombia, but throughout the world.."

01

Internal and external analysis
Internal analysis and technological gaps. Analysis of territory and vocations of the city under the components of government.

02

Objective and operational model
Design an objective model of smart city services and an operating model for the mayor's office that structures the programs, roles and functions.

Overview

Consultancy to carry out the diagnosis, analysis, design the roadmap, the objective and operational model of Rionegro as a smart city.

03

Dashboards and knowledge transfer
Build an analytics report on smart city services and conduct knowledge transfer sessions on smart cities.

Build a smart city model under all verticals of services and programs, applying international standard guidelines, studying the organization and current state of the city of Rionegro as well as promoting a strategy of dissemination and appropriation to citizens.

01

Territorial diagnosis and technological gaps

Technical analysis of the territory (physical, social and economic) and improvement in public management for Smart Cities.
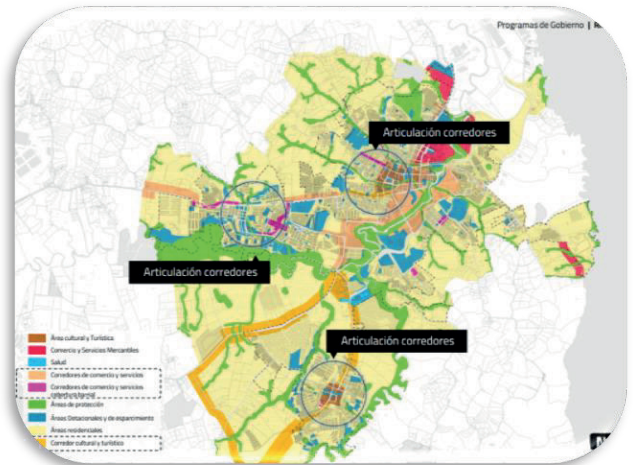
02

Design the roadmap

Design of strategic milestones such as construction of innovation cubes, monitoring and control center, inclusion programs and development of mobile applications.

03

Ambassadors and training

Launch of the Intelligent and Innovative Rionegro ambassador program and training in smart cities, entrepreneurship and analytics.

Results

- Report Analysis of the territory, potentialities and vocations.
- 5 co-creation workshops with actors from the territory on economy, society, technology and culture.
- 1,200 surveys to study vocations, potential and design of the ambassador program.
- Gap analysis report of the IT strategic plan and the Government Program.
- Definition of the Smart and Innovative Rionegro strategic vision, aligned with the Development Plan and public policies.
- Proposal for the science, technology, innovation and entrepreneurship ecosystem.
- Design and execution of the digital inclusion and appropriation strategy.
- Organizational Structure Proposal.
- Roadmap with schedule, project sheets and transition schemes.
- Business case report with financial viability, investment flow, indicators and structure of costs and expenses.
- Virtual training courses on Smart Cities, Analytics and Entrepreneurship.

- Organization and direction of 3 meetings to establish strategic alliances with leaders of smart cities worldwide (Geneva, Amsterdam and Zurich)
- Conceptual design of the program seal, marketing and positioning plan and development of promotional content.
- Implementation of a dashboard for loading data and consulting indicators, deviation or non-compliance alerts according to reference values for monitoring.
- Development of a website for the intelligent and innovative Rionegro program.

CASE STUDY

Platform for Medellin Center of Analytics

Client: MEDELLIN MAYOR'S OFFICE

City of Medellín – Colombia
December 2021

"A unique project in Colombia processing large volumes of data and developing dashboards and advanced analytical models for the generation of insights and key indicators for local government"

Challenge

Develop a unified platform for the analytics and information management of the Medellin mayor's office

01
Data model
Definition of a metadata model based on international standards that allow interoperability with other information systems.

02
Integration and Interoperability
Allow the development and integration of services provided by external entities in a simple way by offering APIs.

03
Visualization
Set of Dashboards in Tableau / Power BI / Grafana connected to the integrated data model that allows real-time visualization.

Overview

Design of data model, dashboards and development of a unified analytics platform that integrates external services and applications as well as information from different sources for further analysis and visualization.

Develop a platform that allows complete understanding by the mayor's office with the data generated from the city and supporting the decision–making process.

01 **Prototype**
Evolutionary prototypes were designed that contained data (real and fictitious) and helped to validate the operation of the use cases.

02 **Product**
Individual and integrated tests were performed based on an analysis and planning of test cases, keeping a record of the results obtained.
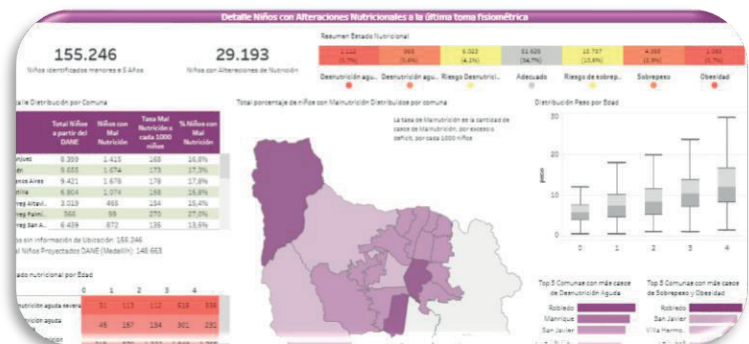
03 **Deployment in Production**
Initial configuration, implementation of the final version and deployment in production were provided.

Results

- Web Platform deployed to integrate existing and new dashboards with user authentication and role definition.
- 10 new dashboards implemented.
- 20 existing dashboards integrated.
- Web and mobile friendly dashboard development.
- Data transformation processes completed and automated.
- Data Lake and 20+ data sources processed.

10	20
New dashboards implemented	Existing dashboards integrated

16	24
Mobile friendly dashboards	Data sources processed

CASE STUDY

Medellin City SuperAPP

Client: MEDELLIN MAYOR'S OFFICE

City of Medellín – Colombia
December 2021

"Mobile APP to integrate city's digital services from local government and bring the citizen closer to the public administration"

Overview

SuperAPP was planned under smart city digital transformation umbrella, as an application that makes life easier and connects the citizen of Medellin with important services and information of the city.

Challenge

Connect the citizens of Medellin with different smart city services and an information system that has a simple and practical user experience for everyone.

01

Information display
Citizens will be able to view different information such as news, sports, cultural agenda, vaccination program, legal information, etc.

02

Offer management
Citizens will be able to apply for job offers, cultural calls or benefits.

03

Transactions & Services
Citizens will be able to pay taxes, ask for certificates, report damages, emergencies and make inquiries or any legal complaints.

Develop an application that allows the citizens of Medellín to interact, communicate with the institutional offer of services available to the Mayor's Office in an agile and timely manner, integrating existing Apps and developing new digital services that generate transparency and trust towards citizens.
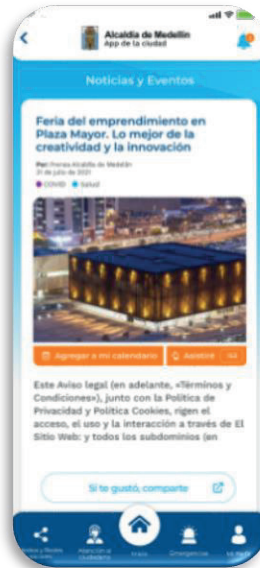
Requirements

01

Definition of requirements (user stories) and services that are included in the application.

Developing

02

Solution architecture definition, prototype design, microservices development and testing

Deployment in Production

03

Creation of configuration and deployment manuals and transition to production

Results

- Robust APP architecture design with microservices pattern
- APP deployed for android and iOS
- 34 microservices implemented
- 9 digital services deployed: news, events, city dashboards, user registration, tax payment, job postings, damage reports, emergencies, social networks integration

9
services deployed

34
Microservices implemented

TECHNICAL DETAIL
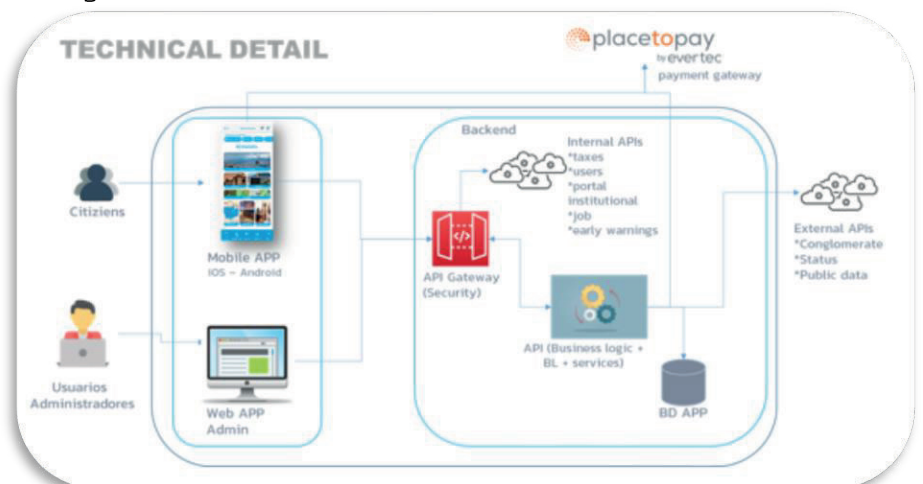
CASE STUDY

Smart City Platfom

Client: MEDELLIN MAYOR'S OFFICE

City of Medellín – Colombia
December 2021

"Using open source technologies, we implemented a successful smart city platform for City of Medellin based on Fiware Project."

Juan Felipe Salazar
CEO, DATION

Overview

Within the development of Medellin as a top smart city in the region, Fiware platform ecosystem was implemented and configured with 3 use cases for the collection and visualization of real time data obtained through IoT.

Challenge

Understand the city of Medellín performance through the capture of data from IoT technologies, collect information for citizen decision–making and advance in the implementation of an efficient and sustainable city model.

01

Use case: People flow
To understand in detail the flow of persons in public areas, thus improve the planning of services and necessary resources at all times.

02

Use case: Smart buildings
Centralize building environmental, electrical and water systems monitoring to understand and evaluate the consumption and possible improvements.

03

Use case: Smart Waste
Transform traditional waste management system by monitoring and centralizing information from different IoT sensors.

Implementation and integration of three smart city verticals using the Fiware platform for the city of Medellín.

01 Use case analysis

Analysis of technical and functional requirements, definition of use cases and implementation priority.

02 IoT devices installation

Installation of sensors for People flow, energy and water consumption, air quality measurement and waste container fill level sensors.

03 Implementation and platform configuration

Platform implementation using open source, extensible and distributed tools. Creation of dashboards.

Results

- 28 IoT devices, properly integrated to the Fiware platform (pilot testing)
- Fiware core implementation using main suggested components complying with architecture guidelines from the city of Medellín.
- Integration to existing open data models as well as data lake from the city of Medellin.
- Analytics from context information obtained, for making decisions on each one of the Smart city verticals.
- Customized and refined dashboards with validation from each of the user areas within Medellín administration.

Future

- Expand the smart. city platform to cover broader scale of the city of Medellín.
- Add new and relevant smart city verticals to the platform, taking into account main city problematics.
- Integrate new data sources from different generators of information such as mobility, security, environment, etc.

3	6	28	1
Smart city verticals deployed	dashboards developed	IoT devices installed	AI model implemented

CASE STUDY

Citizen 360

Client: MEDELLIN MAYOR'S OFFICE

City of Medellín – Colombia
December 2021

"This is a unique application focused on citizen relationship management and understanding through mayor's office interactions and data acquisition"

Carlos Martinez
Analytics Director

Challenge

Integrate and standardize the processes carried out by mayor's office of Medellín for characterization of the citizen and measurement of variables.

01 **Variable and form management**
Each department creates its forms in a personalized way, made up of fixed or base variables and extended variables.

02 **Integration with information systems**
Combining different databases of characterizations and using data integration, visualization and modeling tools.

03 **Data visualization and reports**
Centralized, standardized and available information under strict levels of security and confidentiality defined for each variable.

Overview

Platform that was developed to increase the effectiveness of citizen characterization processes through an information system that serves as fundamental support for the actions of collection, structuring, centralization and analysis of the information collected.

Solution

Develop the central information system where each department of mayor's office will be able to create and manage their citizen characterization forms in a personalized way.

01
Prototype
Design of form management platform, configuration, approval and publishing. Friendly and flexible.
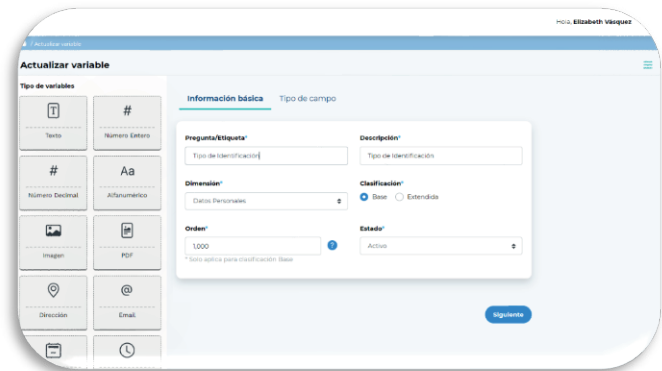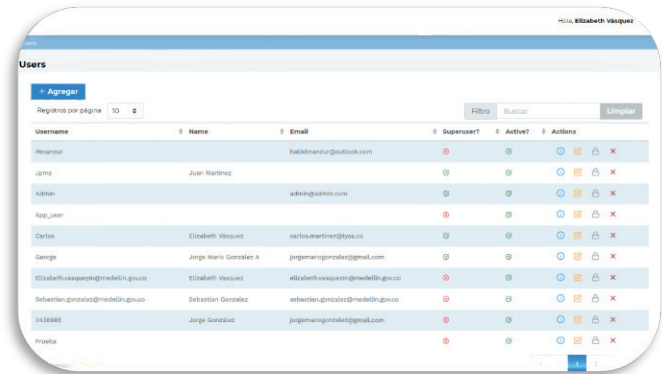
02
Product
Application development and integration of multiple databases and non-integrated technologies.

03
Information and data
Design of data model, system configuration and collection of citizen characterization information. Storage of historical records and actions within the system.

Results

- System with variable management modules and characterization forms.
- Integrated with other internal and external information systems.
- Report query and log management modules.
- Includes configuration of profiles and roles.
- It complies with the development guidelines of the City Hall.

Future

- Design and implementation of new services according to characterization analysis.
- Re-design and implementation of existing services and communication strategies of the different government departments.
- Promotion of initiatives that seek to improve user-entity interaction within the missionary processes of public entities.

45
functional features implemented

12
variable types

9
functional modules developed

10
associated systemic quality components
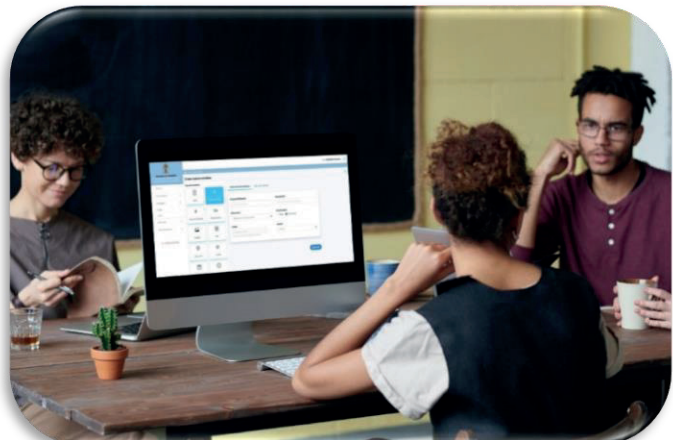
CASE STUDY

Public Real Estate Application

Client: CORPORACIÓN
INTERUNIVERSITARIA DE SERVICIOS (CIS)

City of Medellín – Colombia
December 2021

"Convenient tool to manage all real estate owned and managed by mayor's office of Medellin."

Overview

Information system for the department of Supplies, which allows interoperability with other systems for the exchange of information relevant to the real estate management process.

Challenge

Given the complexity involved in the real estate management process in the Supply department, it is necessary to centralize the information in a system that uses good practices.

01

Functionality
Register and manage the different fixed assets, accounting, financial, document management, geographic system, among others.

02

Roles and users
System that manages different types of users to operate the platform defined by the root user.

03

Integration with other applications
Being able to integrate the platform with other applications such as SAP, GIS.

Solution

Develop an information system that allows interoperability with other systems for the exchange of information relevant to the real estate management process.

01

Modules and forms

System organized by modules that allows creating and managing real estate, and each of its parameters.
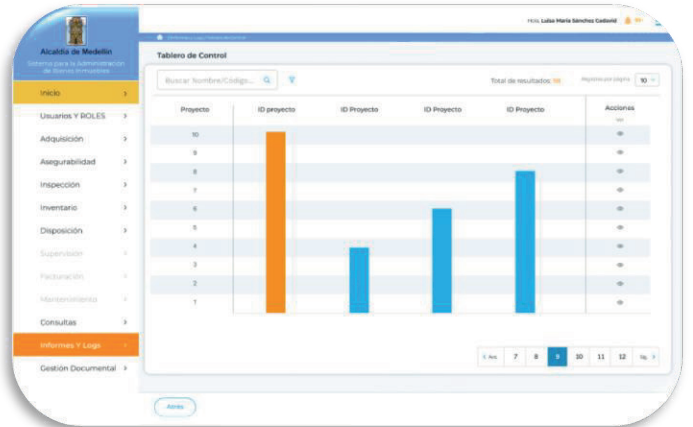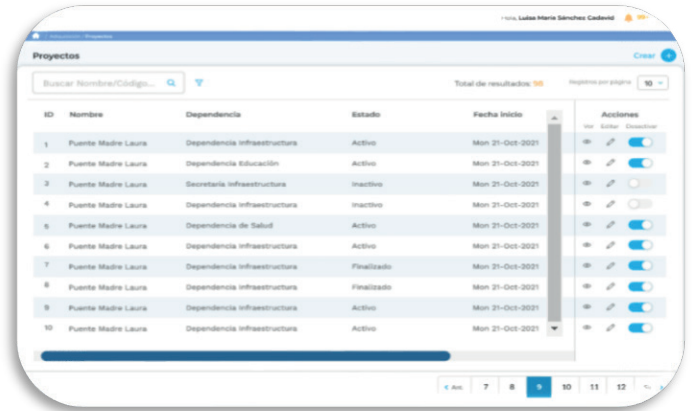
02

Information and data

The data model with a data approach towards the process of configuration, parameterization and collection of real estate in the city.

03

Inspection

Friendly platform for officials who carry out inspections where they can add information on the properties and generate a report on their status.
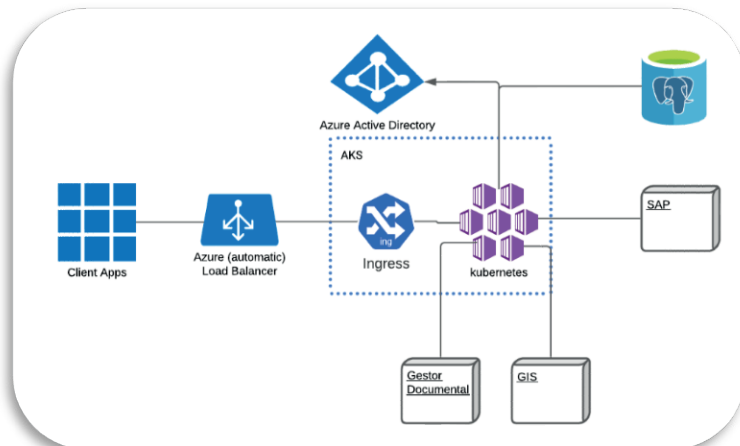
Results

- Inventory management module, initial loading and provisions developed.
- Document management module and reports implemented.
- Inspection system included.
- Integration with SAP systems FI module, counterparty and georeferencing
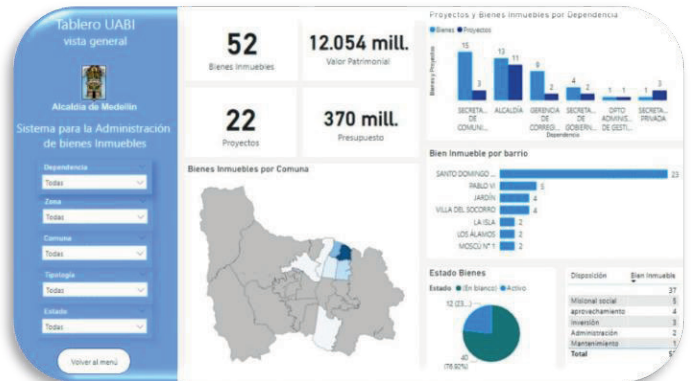
2
dashboards implemented

83
developed user stories

7
developed modules

8
reporting functions and interactions

CONVOCATORIA DE FOMENTO Y ESTÍMULOS PARA EL ARTE Y LA CULTURA 2021

CASE STUDY

Culture & Art Public Contest Management

Client: CORPORACIÓN INTERUNIVERSITARIA DE SERVICIOS (CIS)

Medellín
December 2021

"A project that connects the citizen with the city's Department of Culture, allows them to exploit their creativity and apply for it in different contests for evaluation and awards. Save physical procedures and transfers".

Juan Felipe Salazar
CEO, DATION

Overview

Development of a web platform that allows the public relationship of the Department of Culture with citizens, through the creation, publication, participation and evaluation of calls.

Challenge

Centralize information on cultural events in the city of Medellin and implement in a system the nomination of participants, evaluation of proposals and registration of juries.

01
Creation of calls
Assignment of activities, documents and general information.

02
Submission of proposals
User registration, display of active calls and submission of proposals.

03
Juries and evaluation
Registration, calls and assignment of juries to projects. Evaluation and acceptance of proposals.

Develop a citizen information system that facilitates the management of public resources in accordance with current regulations and coordination with the cultural, artistic and heritage sectors.

01

Requirements & UX
Definition of requirements (user stories) and services that are included in the system. Friendly and functional platform design.

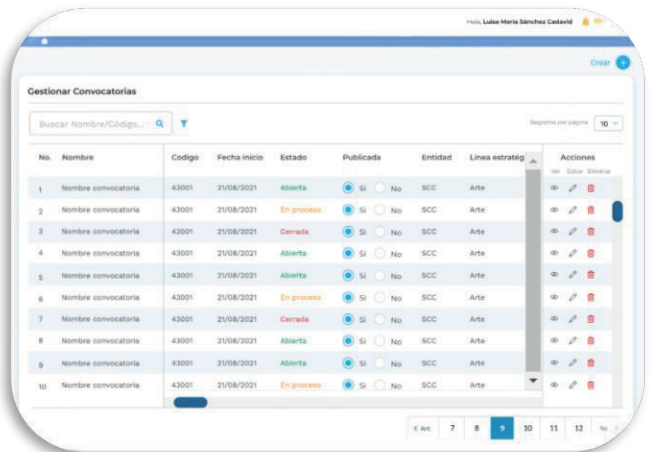**02**

Developing, testing
Definition of solution architecture, development of modules and functionalities, and execution of tests.

03

Deployment in production
Configuration and deployment manuals handed out and support in use to production.

Results

- Module of creation, visualization and management of calls.
- Module of registration of resume and election of jury evaluators.
- System for user registration and authentication.
- Visualization system of published calls and application of proposals.
- Notification center.
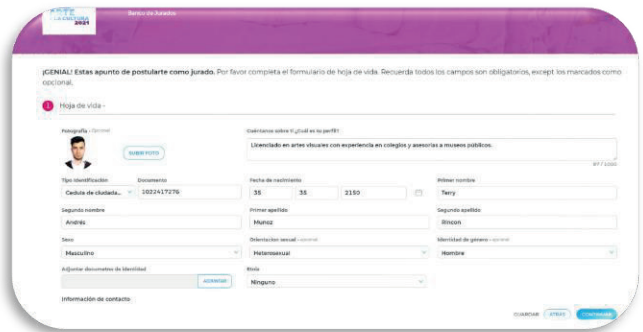
3 contest types to create and manage	**60** categories that can be used for contest
6 contest lines included	**6** modules developed

CASE STUDY

Bank of opportunities

Client: CORPORACIÓN INTERUNIVERSITARIA DE SERVICIOS (CIS)

Medellín
December 2021

"An application for the bank of opportunities, a project decreed by the government to offer credits to small entrepreneurs. We take care of systematizing all its services."

Challenge

Integrate information from the Bank of Opportunities in the city of Medellin, offer online credit application services and manage data through management dashboards for decision-making.

01 **Landing page**
Design of a page that contains the application services and credit information with client authentication and registration.

02 **Internal management application**
Implementation of an application of set up credits, assign requests and manage queries and roles.

03 **KPI's and data management**
Visualize KPI's results in real time for credit management and decision making.

Overview

Application developed to manage the registration, authentication and request for user credits as well as the assignment and approval of requests by officials in the Bank of Opportunities. Services such as citizen credit simulation and managerial data dashboards are also being developed.

Develop a query system for the bank of opportunities, which allows generating credit applications, accessing user information, facilitating the portfolio and application information.

**01**

Requirements

Definition of requirements (user stories) and services that are included in the application.

02

Developing, testing & deployment in production

Definition of solution architecture, development of functionalities, and execution of tests.

03

Development of management dashboards

Creation of the data model. Development of managerial dashboards with managerial functions and indicators.
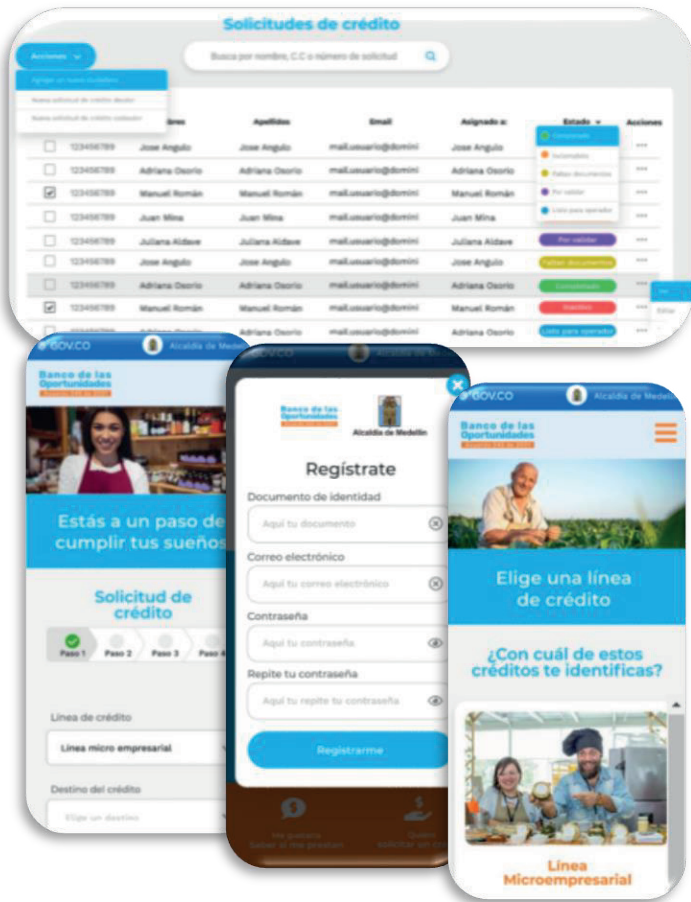
Results

- Landing page deployed in production for the program of the Bank of opportunities.
- 2 management boards that allow the analysis of Bank data.
- Functional application in responsive version for any device.
- Credit simulation application.
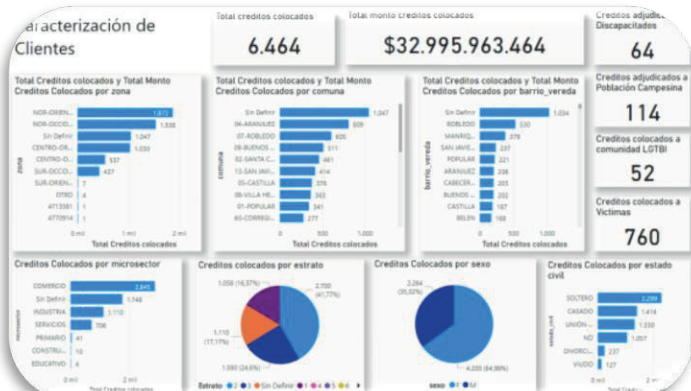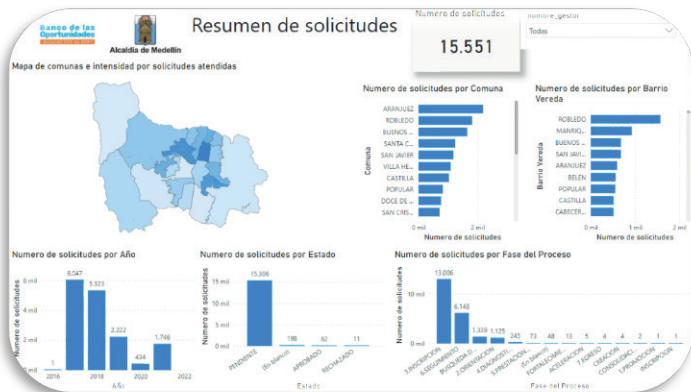
9 dashboards implemented

7 managerial KPI's

7 operation monitoring functions

2 credit application forms developed