



Booklets

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**Title: Design of an integrated web system for document and administrative management of an agricultural center: A case study in San Rafael Ixtapaluca**

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# Introduction

In Mexico, every ejido or agrarian community has its own Ejido or Communal Property Commissariat and its Oversight Council, in accordance with Article 39 of the Agrarian Law. These councils are appointed for three years. Some ejidos and agrarian communities have added powers and obligations for the Commissariat in their internal regulations or communal statutes. Some ejidos and agrarian communities have added powers and obligations for the Commissariat in their internal regulations or communal statutes, such as the following:

- Carry out negotiations with government agencies for the benefit of the community or ejido.
- Prepare and present a work plan to the assembly.
- Coordinate work related to the community's lands and natural resources.
- Convene and chair assemblies, in coordination with community authorities.
- Report and provide clear accounts to the assembly every three months.
- Promote the updating of the general registry of community members or ejidatarios every two years, with prior authorization from the general assembly.

# Introduction

- The above is intended to benefit its members and promote better use of resources, regardless of the sector in which each agricultural center is engaged.

# Background

- In most of Mexico's communal lands, there is a growing problem with the management of important information. To date, evidence of management is kept in physical form or is only known to the members of the committees representing the community, as well as to the communal landholders involved in the activities.
- There is also information for which exact data is not available, which is important and necessary for the commissioner's activities, for example: personal data of ejidatarios, an updated registry or list of ejidos that identifies the type of use given to the plot, support programs provided to ejidatarios, data on relevant dates of the agrarian community, among others.

# Background

- Currently, the Mexican federal government operates the Secretariat of Agrarian, Territorial, and Urban Development. It maintains the National Agrarian Registry (AGA). Its function is to control land tenure and ensure document security. The AGA is responsible for safeguarding, classifying, cataloging, organizing, and safeguarding documents and information related to agrarian matters, as well as responding to requests for consultation and issuing certified copies of said documentation (RAN, 2025).
- The AGA has implemented the following systems: Registry and History of Agrarian Nuclei (PHINA) and the Geospatial Information System of the Rural Cadastre (GIS), which contain agrarian information of the country. The PHINA web system (Registry and History of Agrarian Nuclei), which has 3 sections: agrarian nuclei, search and geolocation (SEDATU, 2025).

# Development tools



Figure 1. Figma

Source: <https://wptavern.com/figma-partners-with-wordpress-to-improve-design-collaboration>



Figure 2. SQL Architect

<https://sql-power-architect.updatestar.com/en>

# Methodology

- The design of the screens, which are the User Interface or UI, and the database, the Data Model, are two critical and interconnected pillars for the success of any web system.
- Screen design focuses on the user experience (UX) and how the user interacts with the system.
- Database design focuses on how data is stored, organized, and related efficiently and securely.
- The design of the ejido registry modules, support programs, and historical data were established through the application of different data collection techniques.

# Methodology

- This process allowed for the identification and definition of the user roles the system must address: administrator, secretary, communal land commissioner, and communal land member.
- The system's modular structure was also determined, integrating the following components: communal land members, communal land members, activities, historical data, support programs, event attendance management, and report generation, among others.

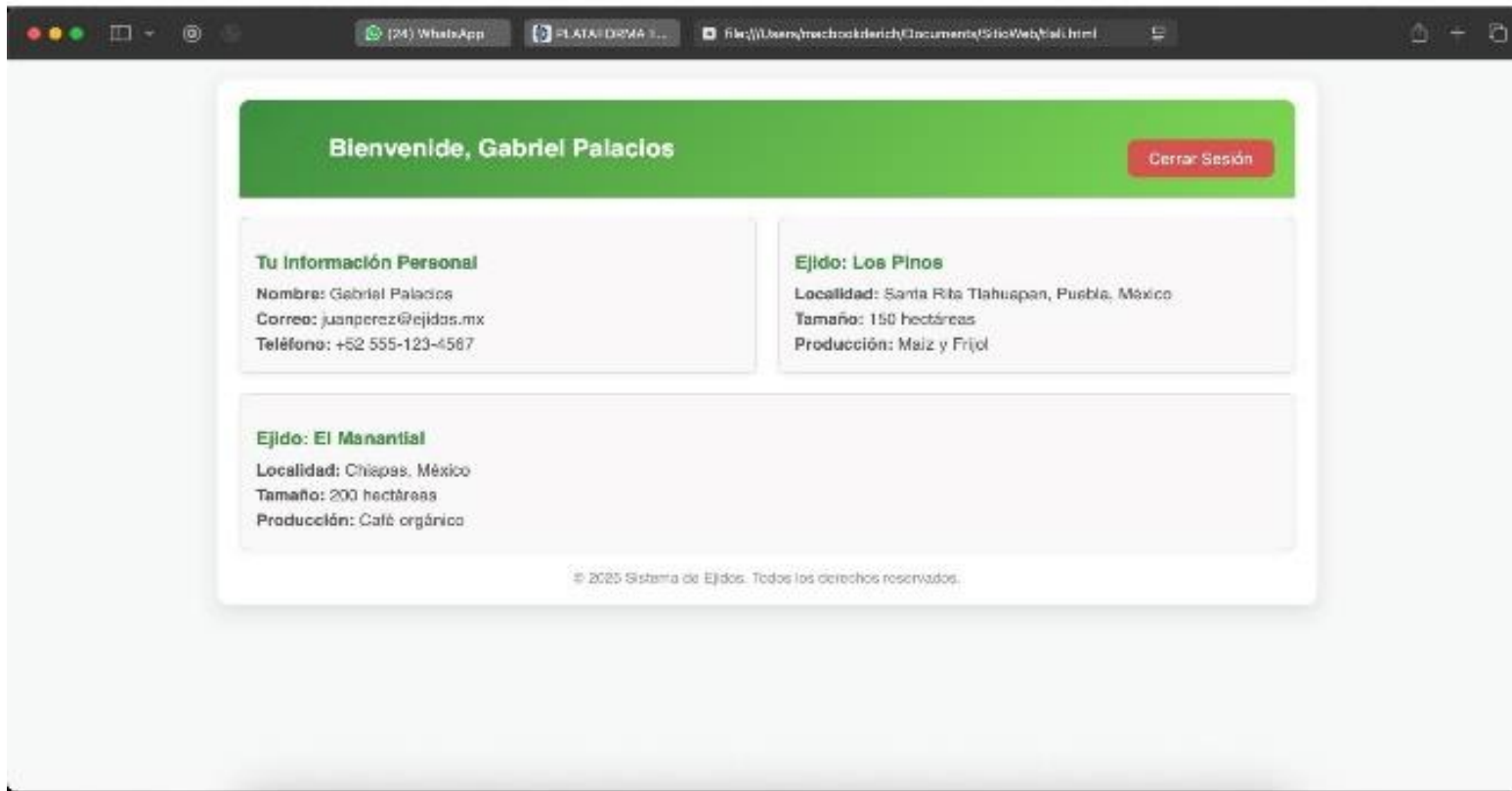


Figure 3. Welcome screen

Table 1. User Story Registry

User Story	
<b>Number:</b> 1	<b>User:</b> administrator, secretary, ejido commissioner and ejidatarios.
<b>Name of story:</b> Registry of ejidatarios	
<b>Business Priority:</b> High	<b>Risk in development:</b> High
<b>Responsible programmer:</b> Andrés Pérez	
<b>Description:</b> Two options will be displayed: "Add Ejidatarios" and "Consult Ejidatarios", which will contain the following: <ul style="list-style-type: none"><li>• <b>Add Ejidatario:</b> A form will be displayed to register the ejidatario where the user must enter all the requested information, such as name, paternal surname, maternal surname, date of birth, sex, marital status, address, telephone numbers, and upload a photo of the ejidatario, placing a button at the end, which will record the information that was entered and redirect to the list of registered ejidatarios.</li><li>• <b>Consult Ejidatario:</b> The list of ejidatarios registered in the system will be displayed, with buttons to view the different options that will allow you to modify and delete the data.</li></ul>	

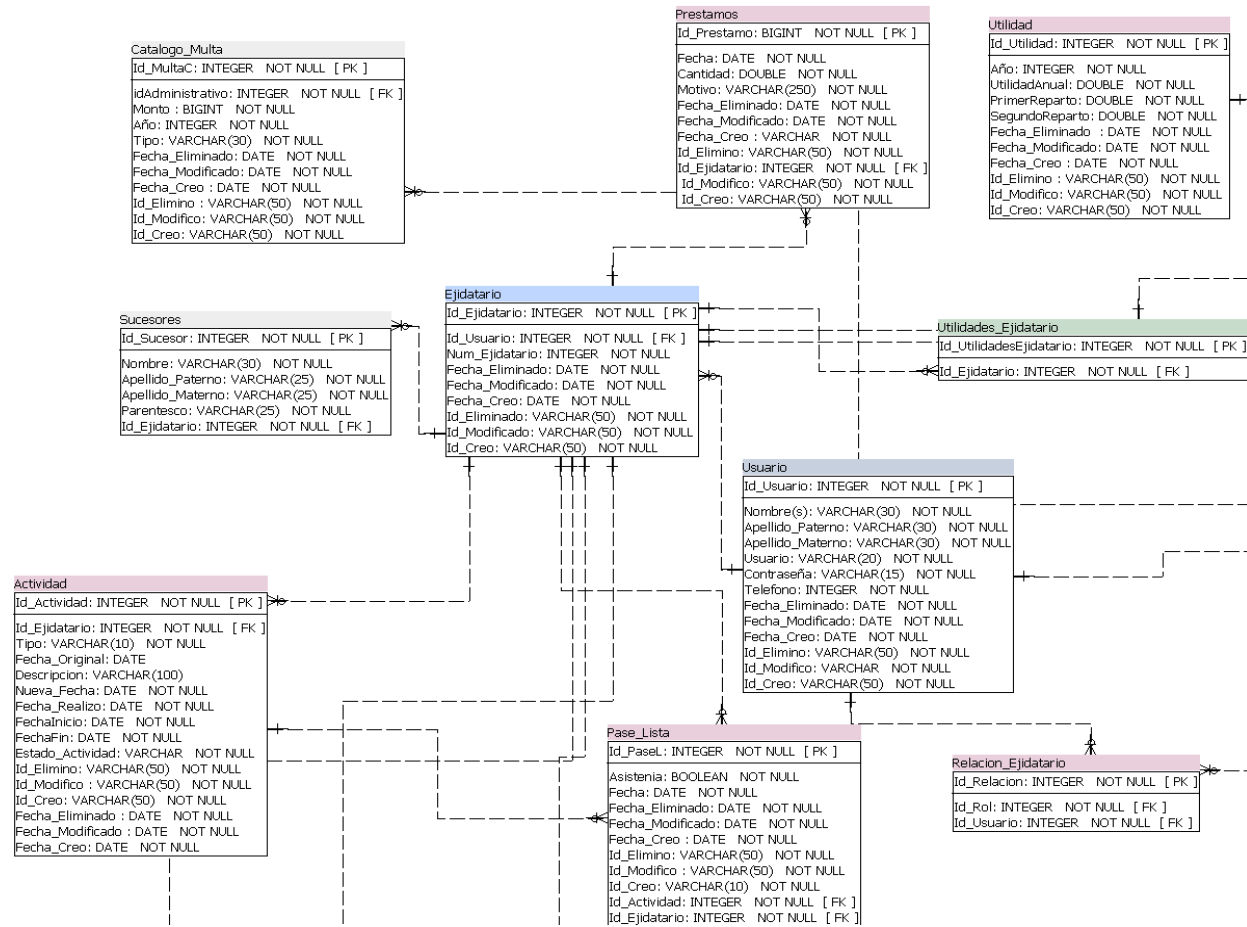


Figure 3. Desing Database

# Results

- The system screens and user stories were designed, allowing for the definition of the interface's functionality and interaction. These designs were presented to the police department staff to validate interface handling and detect potential errors early on.
- The simultaneous design of the screens and the database allowed us to identify that these components are not independent, but deeply interconnected.

# Conclusions

A web-based system was designed to efficiently manage information on ejidos, ejidatarios, and the activities of the ejido core. The platform will allow data to be updated in real time, reducing query times and ensuring consistency in the management of material and financial resources. It will also optimize activity administration and financial management, improving the overall organization of the system.

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