Web-Based Georeferenced Information System - A Cutting Edge Managing Tool for Opportunity Portfolios and Oil Business*

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Abstract

The Integrated System of Opportunity Portfolios (SIPO) is a Web-based Information System that makes it possible to display in a confident way and in real time oil business information, eradicating redundancy and supporting the process of decision-making. SIPO is also an Oil Business Hybrid Web Application (Oil Business Mashup), which combines functionality and presentation from two open source products, giving the users a new service. These products are: Fusion-Charts Free to display sensitive analysis charts in economic simulations, and Google Earth's API which allows through KML and KMZ files to incorporate new geographic and geoscience data.

SIPO Capabilities and Structure

SIPO started as an assessment requirement from GEDNN* (New Businesses Evaluation and Development Management) whose initial purpose was to show the dynamic progress of PDVSA's four main projects –Mature Fields (CM – Campos Maduros), Joint Ventures (EEMM – Empresas Mixtas), Orinoco Oil Belt (FPO – Faja Petrolífera del Orinoco) and Offshore (CA – Costa Afuera). SIPO shows and manages geosciences, surface, and economic data, a sort of business related documents, the company's polygon geographic situation and its general production data. In the geosciences area SIPO displays isopach maps showing the oil fields thickness variation, structure/fault maps representing the oil field stratigraphic subsurface and the rock surface features, 2D seismic and 3D seismic interpretation showing the subsurface, allowing the user to explore the data in a number of different ways and to manipulate the angle of view and visualize a site as a whole, and showing wells allowing the user to know how many wells are in the studied oil field, classified by high performance, active and inactive, and some data about the high performance wells, such as name, geographic situation, oil field, parcel, total feet deep, start harvest system, °API, water and sediment, well completion diagram, gamma ray and

historical production. On the surface SIPO has facilities that provide users data about the oil treatment, such as Clusters, flow station, oil and gas pipelines, piers, oil refineries and flow station outlines.

SIPO provides different documents which permit users to know about different areas of the company, such as legal documents, business plan, and memorandum of understanding. General documents, such as PDF or PPT general presentations, Dossiers that are resumes of the company data, Social Activities detailed presentation and the organizational structure. In economic Strategic Data, SIPO has in the menu options an item that contains the main economic variables of the projects and permits the user to do an economic sensitivity simulation with those variables and shows three kinds of economic graphics. The variables are: CAPEX, OPEX, Inflation, Oil Production, WTI price scenario, and the graphics are Cash Flow, Government Take, and Oil and Gas Production. The system contains three modules linked to MySQL Database Management System and through them it is possible to manage the data with web forms and also to navigate in web pages for whole information structure which is up to date in all projects. SIPO has three kinds of user profiles: Administrator, Board of Director and Manage Analyst, which are part of the logical access to SIPO modules. The SIPO contains fifty (50) user graphical interfaces developed in PHP 5, HTML 4.01 and JavaScript 1.9.

Dossier Module

Allows the Management Analyst to control Dossier documents showing the main information about Business Ethics, Corporate Responsibility and energy data of a country or company (Figures 1 and 2). This module even permits deletion and download of some dossiers that the Management Analyst needs, as well as display documents uploaded by other users with the same profile.

Administrator Module

Provides to the Administrator the opportunity to upload, to reload or to delete information of four main GEDNN projects (Figures 3, 4, 5 and 6). The Administrator can create new companies with general features, geoscience and surface facilities information as mentioned before, and any other geographic elements and economic data.

Board of Directors Module

In this module (Figures 7, 8, 9 and 10) the user can dynamically see the information loaded by the Management Analyst and the Administrator through the options menu to access different SIPO's sections, such as Dossiers, a thematic map that situates countries and its companies with dossiers as links allowing the user to download it; Projects containing the four main GEDNN projects and users would see the georeferenced information, download the documents, and access at the sensitivity analysis in economic simulations of the company. Moreover, the user has access to the CVP Atlas Module showing a set of different maps with gas, oil, and

electrical Venezuelan information created by GEDNN portfolios group.

Conclusions

All these features define SIPO as a leading cutting edge technological tool on Geographic Information Systems unique in Venezuela. It supports and accelerates the decision-making process and brings confidence in data management. SIPO guarantees information integration and its secure visualization, and its implementation reduces the concurrence of same processes on the different synergy work areas. This application may be applied to any other management areas where handling large amounts of information, 3D visualization, and real time data updating are critical factors in the decision-making process.

DOSSIER MODULE MAIN INTERFACES

Figure 1. Upload and Delete Dossier Screen by Company

Figure 2. Upload and Delete Dossier Screen by Country

ADMINISTRATOR MODULE MAIN INTERFACES

Figure 3. Oil Field Management Screen.

Figure 4. Companies Management Screen.

Figure 5. Subsurface and Surface Facilities Georeferenced KML and KMZ Management Screen.

Figure 6. General Themes Layers Management Screen.

BOARD OF DIRECTORS MODULE MAIN INTERFACES

Figure 7. Georeferenced Subsurface and Surface Facilities and downloadable documents options Screen

Figure 8. 3D Seismic interpretation and downloadable documents options Screen

Figure 9. Georeferenced general themes layers and downloadable documents options Screen

Figure 10. Downloadable Dossiers thematic map Screen.

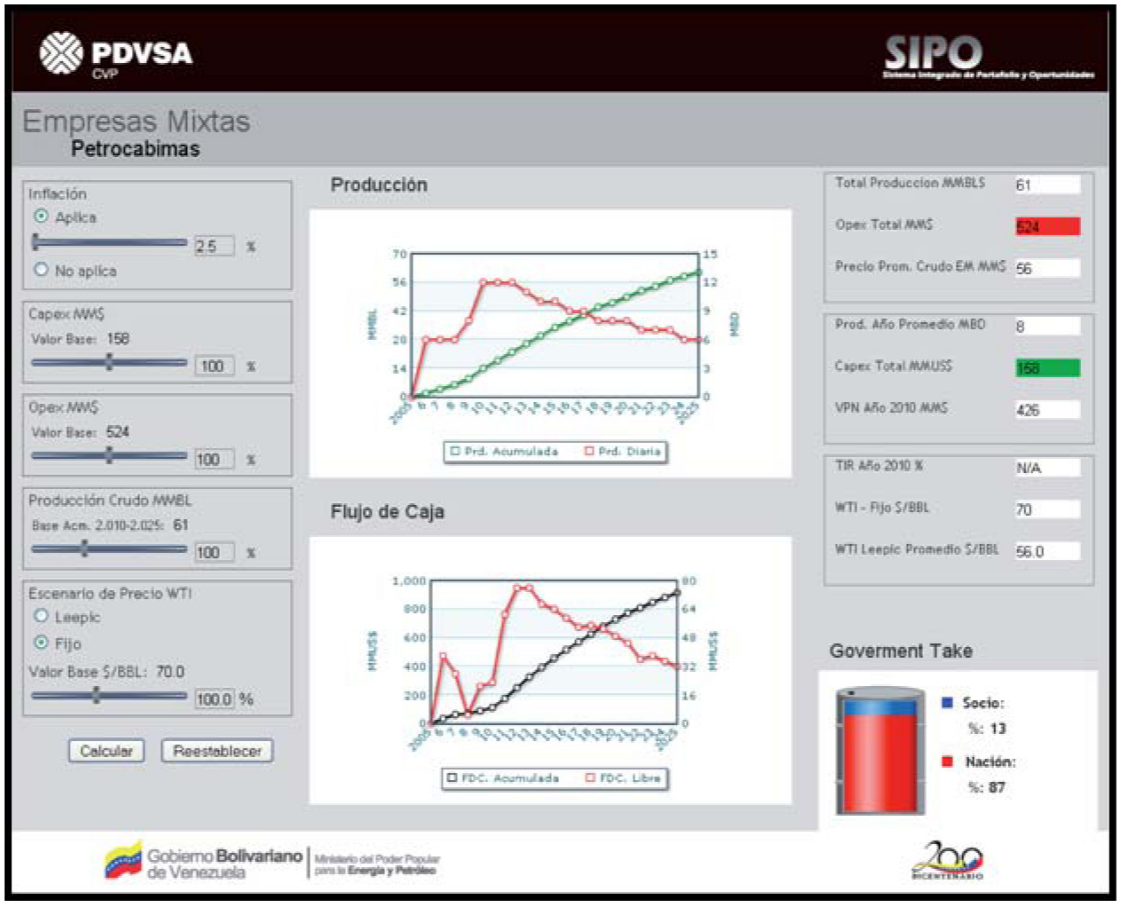

Figure 11. Economic Section Screen