1. General Overview

The VOGO eBS GIS module is a complete solution for managing, analyzing and visualizing spatial data, natively integrated into the VOGO eBS platform. Based on an open-standard technology stack — GeoServer, OpenLayers and PostGIS — the module provides organizations with enterprise cartography and geospatial analysis capabilities, available both cloud and on-premise.

Industries & Common Applications

The GIS module is most frequently requested in organizations that manage extensive physical infrastructures or processes with an essential geographic component:

- **Utilities** (water, gas, electricity, district heating) — visualization and management of distribution networks, intervention planning, field index readings, faults and repairs
- **Public Administration & Institutions** — urban planning, cadastre, building permits, territory monitoring, zoning plans
- **Public Health & Veterinary** — disease outbreak mapping, monitoring of authorized units, geographic traceability of inspections
- **Transport & Logistics** — route optimization, fleet management, real-time delivery monitoring, warehouse planning
- **Agriculture & Environment** — agricultural plot monitoring, ecological zoning, protected area management, pollution monitoring
- **Telecommunications** — network planning, coverage maps, passive infrastructure management
- **Emergency & Public Order** — intervention coordination, risk mapping, evacuation plans
- **Retail & Marketing** — catchment area analysis, new location selection, customer base mapping
- **Real Estate & Construction** — site due diligence, geographic feasibility studies, project visualization
- Ask for more if the industry you are looking for with GIS applications is not found in the list above

2. Technical Architecture & Technology Stack

Main Components

- GeoServer — open-source GIS server for publishing, managing and serving geospatial data; support for WMS, WFS, WCS, WMTS; on-premise and cloud deployment
- OpenLayers — JavaScript library for interactive map visualization in the browser; support for vector layers, raster, tiles and external services
- PostGIS — PostgreSQL extension for efficient storage and querying of spatial data; support for complex geometries, spatial indexing, SQL geospatial analyses
- VOGO eBS GIS Integrator – web based and mobile application developed by VOGO Technology based on above technology stack

GeoServer	On-premise & Cloud — WMS/WFS/WCS service publishing, workspace and layer management
OpenLayers	Interactive web viewer — zoom, pan, layers, drawing, attribute editing directly on the map
PostGIS	Spatial storage — geometries, R-Tree indexing, SQL geospatial analyses, time-series data
Deployment	On-premise (own server) or Cloud (AWS, Azure, GCP) — flexible architecture
Supported Formats	SHP, KML, GeoJSON, CSV with coordinates, GPX, GeoTIFF, DWG, DXF, external WMS/WFS

3. Visualization & GIS Viewer Interface

The platform provides a complete GIS Viewer, accessible from the web interface, with full functionality for interacting with geospatial data.

- Enables visualization and interaction with vector and raster maps with full zoom, pan and navigation functionality
- Displays network element attributes directly on the map upon selection, without additional navigation
- Allows adding, hiding, reordering and deleting geographic data layers
- Organizes layers hierarchically (tree structure), with full visibility and transparency control
- Provides direct drawing tools on the map: points, lines, polygons for marking areas of interest
- Includes an accessible control panel for managing all functions: layers, visualization, analysis

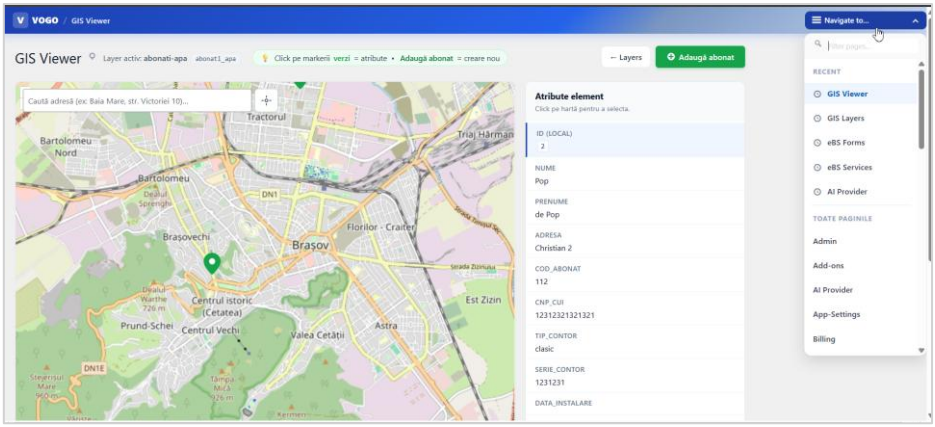

Fig. GIS Viewer VOGO eBS: map view, active layers and selected element attributes

4. Layer Management & GeoServer Configuration

The platform provides a complete administrative interface for defining and managing GIS layers, natively connected to GeoServer.

- Allows creation of layers with unique code, display name and description, organized hierarchically (parent-child structure) with configurable sort order
- Defines the layer type and how data is obtained from GeoServer, controlling what actions the user can perform
- Allows modification of network element attributes directly from the viewer, with automatic propagation to GeoServer
- Ensures real-time synchronization of changes between the web interface and the GIS server
- Supports overlay with external geospatial data: cadastral data, street nomenclature, topographic maps

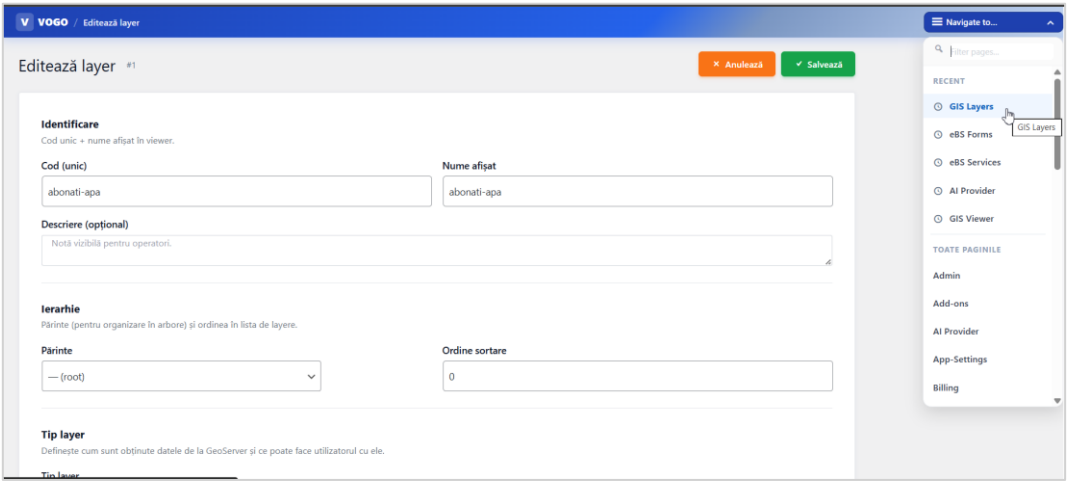

Fig. GIS layer definition and editing interface with native GeoServer integration

5. Integration with VOGO Portal & Forms

The GIS module is natively integrated with VOGO Portal and VOGO Forms, enabling the use of interactive maps directly in digital forms and public services.

- Provides a dedicated 'Map' field type in the form builder, integrable in any digital form without code
- Allows citizens to locate addresses on the map directly from the request form, with 'Locate my current position' functionality
- Supports address fields with automatic geocoding (text address → geographic coordinates transformation)
- Integrates the map into public service workflows: authorizations, approvals, requests — with geographic positioning of the request
- Allows generation of approvals with placement of the graphic symbol at the exact location on the map and attachment of the complete electronic file

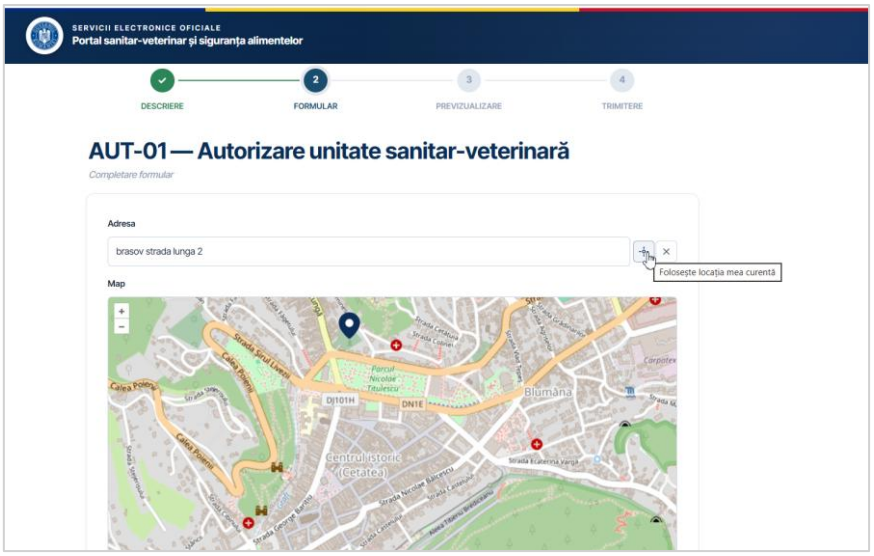

Fig. GIS integration in Public Portal: authorization form with interactive map field

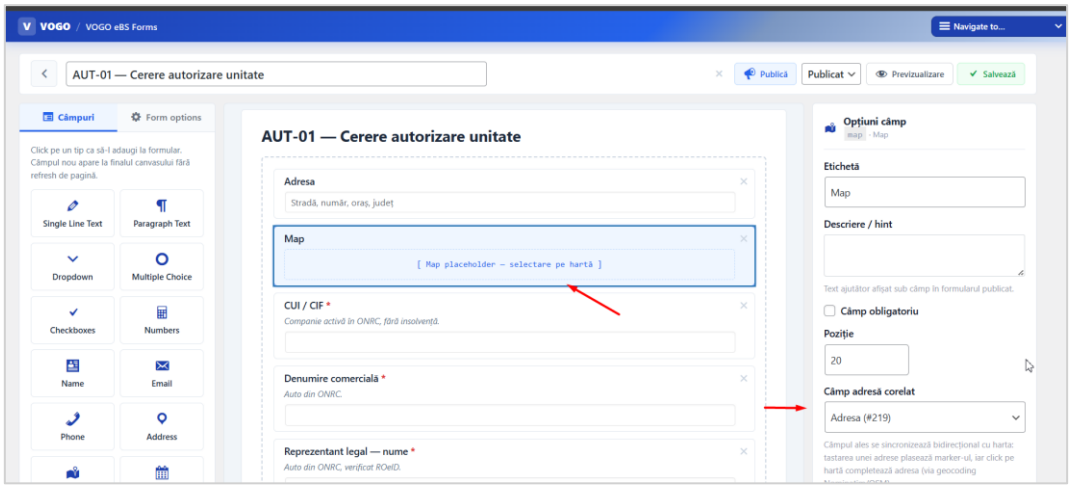

Fig. Map field available in the VOGO eBS Forms form builder

6. Spatial Analysis & Geocoding

- Performs complex spatial analyses: intersections, buffer, proximity analysis, area and distance calculation
- Includes geocoding functionality for transforming addresses and textual descriptions into geographic coordinates (latitude/longitude)
- Supports management and visualization of geographic data by time intervals (time-series data), facilitating temporal analysis
- Allows filtering and querying of spatial data via geospatial SQL (PostGIS) for reports and complex analyses

- Generates reports with map visualization of the selection: pie chart, bar charts with drill-down to individual elements on the map

7. Mobile Application for Field Interventions

- Visualizes customers and network elements on the map directly from the Android/iOS mobile device
- Allows reading the index and transmitting it in real time to the management application
- Works offline with local data saving when the device is disconnected from the internet, with automatic synchronization upon reconnection
- Allows generation of intervention reports with configurable fields: dropdowns with auto-filtering nomenclatures, classic fields, dates
- Supports handwritten signature directly on the mobile device screen
- Automatically generates and sends the signed PDF file by e-mail

8. Additional Features

Data Import & Export

- Supports data import and export in standard geographic formats: SHP, KML, GeoJSON, CSV with geographic coordinates, GPX
- Allows loading and visualization of data from external sources, ensuring compatibility with geospatial data standards
- Allows attaching complete electronic files to geographic elements: PDF, JPG, DWG, DXF and other formats

Public Citizen Portal

- Generates public portal sections available to citizens at a public web address with login, visualization and data submission functionality
- Allows bill payment by card directly from the platform, with automatic confirmation and debt clearance

Dashboard & BI

- Provides a dynamic dashboard with filters by information types: readings, interventions, pie chart and bar graph visualization
- Allows detailed map display of elements selected from reports, with the ability to work on each element and export data
- Natively integrates with the platform's BI solution for maps, DMS and mobile applications

User Interface

- Provides a user-friendly and intuitive interface, easy to use for both technical and non-technical users
- Allows differentiated interaction modes for internal users and citizens/external users

9. Performance, Security & Scalability

- Efficiently manages large volumes of geographic data with fast response times and smooth user experience
- Includes user authentication and authorization, data encryption and complete access auditing
- Allows subsequent addition of new features and modules to adapt to the changing needs of the organization
- Is scalable to handle an increasing number of users and larger data volumes as the organization grows
- Uses open standards and protocols (OGC: WMS, WFS, WCS) for interoperability with any external system

10. Supported Integrations

VOGO Forms	Native Map field in the form builder — geocoding and location in digital workflows
VOGO Portal	Interactive maps in the public portal for citizens and authorization services
VOGO BI	Dynamic dashboards with geospatial visualization, filters and data export
DMS	Attaching electronic files (PDF, DWG, DXF, JPG) to geographic elements
Mobile Application	Network visualization, index readings, field interventions, offline sync, handwritten signature

External GIS Server	Consumption of GIS services published by third-party systems via standard WMS/WFS
Payment System	Bill payment by card directly from the public portal component
Invoicing System	Invoice visualization and their status; Customer file;