

ArcGIS Enhances Efficiency of MGL's City Gas Distribution (CGD) Network

Client

Mahanagar Gas Limited

Industry

Utilities

Organization Profile

Mahanagar Gas Ltd. (MGL) stands as a prominent natural gas distribution company in India, primarily serving the bustling metropolis of Mumbai and its surrounding regions. MGL prides itself on its City Gas Distribution (CGD) network, meticulously designed, maintained, and operated by its in-house team of skilled professionals, adhering to globally recognized technical and safety standards. The CGD Assets are mapped to their geographic coordinates and are an integral part of various departments' day-to-day activities.

Project

Cloud GIS system for City Gas Distribution Networks

Website

www.mahanagargas.com

Project Summary

The Enterprise implementation that was taken up had several facets right from migrating from on-premises GIS to cloud GIS system. Evolving business needs have been addressed by implementing a comprehensive GIS system that fosters collaboration and connectivity across different teams. The system offers a wide range of advanced features and functionalities that go beyond basic mapping capabilities. This includes advanced spatial analysis tools, providing users with more powerful tools to extract meaningful insights from spatial data. The Enterprise system provides seamless connectivity across different platforms and devices for different user segments.

Challenges

The old system was quite outdated and didn't have the scalability for multiple departments' usage. The application was built on a standard COTS product which lacked customization options based on the emerging needs of the GIS users at MGL. The process had a two-way migration engine which was used to import and export data through a scheduled process, which took several hours to complete daily. Moreover, the old web and mobile GIS application was no longer supported by the original OEM. These problems led to the decision to migrate from the on-premise GIS System to the Cloud GIS System.

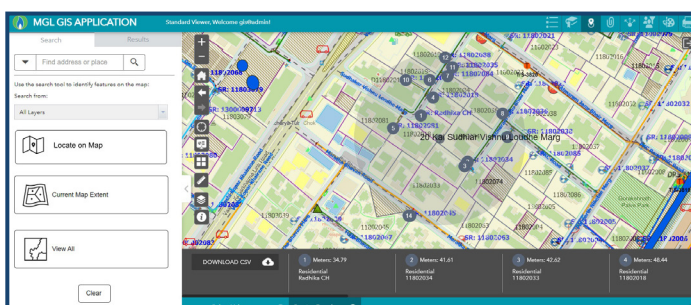
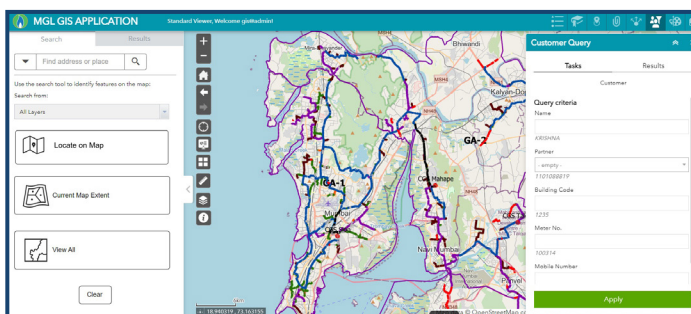
The major challenges faced by the old system included:

Lack of Interoperability: The older GIS systems did not support modern data formats and standards, making it challenging to integrate them with other systems. This lack of interoperability hindered collaboration and data sharing between different organizations and departments.

Limited Spatial Analysis Capabilities: Advancements in spatial analysis techniques and algorithms were not supported by the older GIS system. This limitation affected the system's ability to perform complex analyses and extract meaningful insights from spatial data.

Scalability Issues: As the need for GIS functionality grew, the old systems struggled to scale up to meet increased demands. This limited the system's ability to handle larger datasets, more users, and additional functionalities.

Cost of Maintenance: The cost of maintaining and supporting the older GIS system increased over time. Finding replacement parts, supporting legacy software, and addressing compatibility issues became more challenging and expensive as the system aged.



Solution

The new web application, powered by ArcGIS, is set to empower MGL's organization-wide GIS users by allowing them to access and visualize the MGL pipeline network and its assets from both office and field locations. This enhanced accessibility will equip users with valuable insights, enabling them to make informed decisions in the performance of their duties.

Furthermore, MGL is actively engaged in the development of a Corrosion Protection (CP) module within ArcGIS. This module will serve as a valuable tool for recording TLP readings, conducting in-depth analyses based on these readings, and generating comprehensive reports within the software, thereby supporting the CP team's operational efficiency. Similarly, the valve chamber cleaning process flow is streamlined in order to manage the effectiveness of cleaning activities through intuitive mobile applications using Survey123 forms.

The integration of Survey123, ArcGIS JS API, and Dashboards creates a comprehensive GIS solution that caters to the diverse needs of departmental stakeholders, from field data collection to visualization and analysis. ArcGIS Dashboards provide a way to create data visualizations and present key indicators, charts and visual elements (attachments) captured from the field in a dashboard format. The GIS ecosystem also helps in reducing data silos and enabling different teams or departments to work with a unified dataset. This promotes collaboration and avoids duplication of efforts in maintaining separate datasets.

Benefits

The GIS implementation is leading to the following key benefits:

- **Enhanced Performance:** The GIS system allows users to work with larger datasets and perform complex spatial analyses more efficiently. It also enables better performance in terms of data processing, analysis, and visualization.
- **Advanced Workflows and Functionalities:** The GIS system offers a wide range of advanced features and functionalities that go beyond basic mapping capabilities. This includes advanced spatial analysis tools, providing users with more powerful tools to extract meaningful insights from spatial data. The Enterprise system provides seamless connectivity across different platforms and devices for different user segments. ArcGIS Dashboards provide a much-needed snapshot view of the assets under regional territories.
- **Seamless Integration:** Interoperability has been a key challenge addressed by the GIS system, as it seamlessly integrates with other systems and technologies. This fosters collaboration and data sharing across different departments and organizations.
- **User-Friendly Interfaces:** The user-friendly interface of the GIS system contributes to increased productivity, catering to both experienced GIS professionals and new users, thus reducing the learning curve.

- **Scalability:** Scalability is a critical advantage, allowing MGL to expand its GIS capabilities to meet growing needs. The mobile access provided by ArcGIS systems enables field personnel to interact with spatial data using smartphones or tablets, enhancing field data collection, asset management, and decision-making processes. The implementation also ensures cost efficiency in the long run, with improved performance, reduced downtime, and enhanced productivity contributing to overall savings. Additionally, specific modules, such as the Corrosion Protection (CP) module and streamlined Valve chamber cleaning processes, demonstrate the system's adaptability to diverse operational needs, further enhancing MGL's operational efficiency.
- **Mobile Access:** ArcGIS systems come with mobile capabilities, enabling users to access and interact with spatial data in the field using smartphones or tablets. This enhances field data collection, asset management, and decision-making processes.
- **Cost Savings:** Upgrading to a new cloud GIS system leads to cost savings in terms of reduced hardware maintenance and support expenses. Newer systems are often more efficient, reducing the need for frequent hardware upgrades and maintenance.
- **Manpower Efficiency:** A more user-friendly interface and improved processing speeds lead to time savings for GIS professionals. Tasks that took longer in the old system get completed more quickly, leading to increased efficiency. A lot of tasks are automated minimizing GIS teams' interference to routine activities.
- **Reduced Downtime:** Improved system reliability and reduced maintenance requirements result in fewer instances of system downtime. This translates directly into hours saved that would have otherwise been spent on troubleshooting and resolving issues.
- **Faster Decision-Making:** The ability to perform complex spatial analyses more quickly enables faster decision-making processes, saving hours or even days in critical situations.
- **Real-Time Updates:** The GIS system supports real-time data updates, ensuring that the information available is current and accurate. This can be particularly important in scenarios where decision-makers rely on the latest data for planning and response.
- **Higher Data Accuracy:** Advanced data management tools in the GIS system contribute to better data quality control, reducing errors and inaccuracies that may have occurred in older systems.

“The implementation of Esri's ArcGIS Enterprise solution at Mahanagar Gas Ltd. (MGL) marks a transformative milestone for the organization, bringing about a variety of benefits. Firstly, the new GIS system enhances overall performance, leveraging cloud implementation of the software for more efficient data processing, analysis, and visualization. This allows MGL to handle larger datasets and perform complex spatial analyses with greater ease. The advanced workflows and functionalities offered by Esri's GIS platforms, including ArcGIS Dashboards, provide a comprehensive view of assets under regional territories, empowering users to make informed decisions.

– Viraj Kulkarni, Ch. Manager - GIS, MGL