BEST Achieves Excellence in Electrical Utility Management with ArcGIS

Client
Brihanmumbai Electric Supply & Transport Undertaking (BEST)

Organization Profile
The Brihanmumbai Electricity Supply and Transport Undertaking (BEST) is a civic transport and electricity provider public body based in Mumbai, Maharashtra, India. The Electric Supply Division of Best Undertaking carries out the distribution of electricity to consumers in the city area of Mumbai.

Project
BEST- Enterprise GIS Implementation

Technologies Used

ArcGIS Desktop: A foundational piece for GIS professionals to create, analyze, manage, and share geographic information so that decision makers can make intelligent, informed decisions.

Schneider Electric's ArcFM™: A powerful extension of Esri's ArcGIS® platform that provides a graphical, data rich environment and supports map-centric, intuitive modeling, design, maintenance, and management of facility and land base information for electric, gas, water utilities, and telecommunications providers.

Feeder Manager: To keep track of the circuit to which a feature is connected (Feeder ID), the energized phase(s) of the feature (Feeder Info), the feature's phase designation and voltage (Electric Trace Weight) and, in case of multi-feeds, the second circuit to which the feature is connected.

Autoupdators: Pre-defined rules to update attributes or create new features.

Electric Traces: Tracing of the network provides the framework to visualize, manage, and work with simple connectivity models.

Website
https://www.bestundertaking.com/

Project Summary

BEST needed to implement a GIS web-based enterprise application for planning, operation, and maintenance of the existing electric network, assets, and facilities. Esri India implemented a device-responsive GIS Web Application, enabling users to access it through various platforms such as a desktop, laptop, or mobile. The Application provides robust data mapping capabilities and advanced network analysis & tracing functionality.

Challenges

The GIS Web Application has helped BEST to overcome the following challenges that existed in the previous system:

- Proprietary data formats had limited interoperability.
- Custom tools/workflows were difficult to manage, update and change.
- Network topology and connectivity, data conversion/compatibility were dependent on AutoCAD.
- Limited capability to check data quality and health.
- Limitation of data sharing with multiple teams due to limited web capabilities.
- Difficulty in frequently updating data and landbase.
- No Integration with OSS/BSS.

Solution

The GIS Enterprise Solution designed for BEST includes the following components:

- Electric data model design as per industry standards.
- Electric data migration of spatially adjusted electric assets and facilities to ArcFM electric data model.
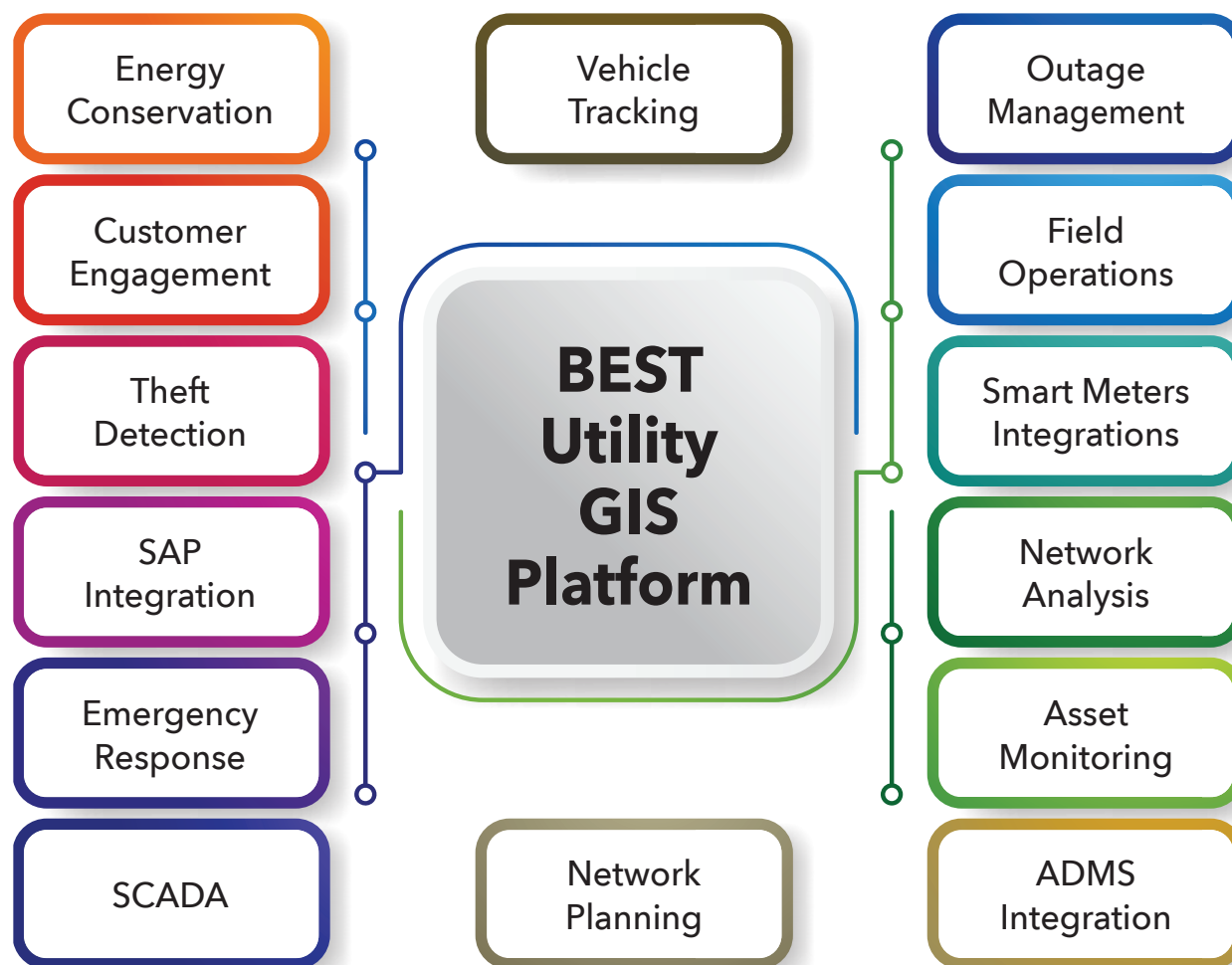- Landbase data migration such as buildings and cadastral maps.

GIS functionalities are implemented using the tools and capabilities available within ArcGIS and ArcFM .
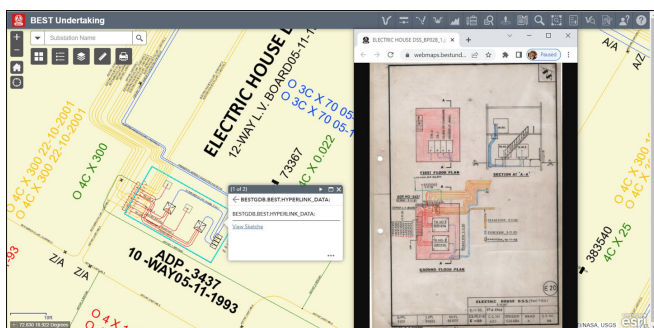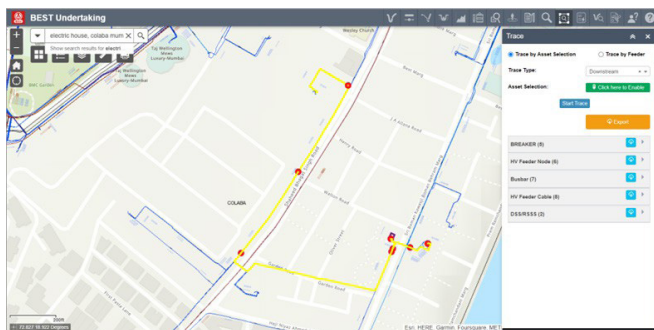
Technical Highlights

- Legacy Electric Network data is migrated into location enabled Enterprise GIS Network.
- Esri India developed Hyperlink functionality that helps users to view additional documents over the Web.
- The device-responsive Web Application enables the user to access information anytime, anywhere.

The Web Application is accessible on the internet as well as on the intranet. The web portal consists of various web basemaps available in the application. This application helps the user in visualization, finding the cable routes, finding affected underground infrastructure due to trenching, locating faults based on distance from and to switching devices, and viewing the charts. This GIS Web Application with its capabilities helps in better decision-making for the future.

Energy Conservation	Vehicle Tracking	Outage Management
Customer Engagement		Field Operations
Theft Detection	**BEST Utility GIS Platform**	Smart Meters Integrations
SAP Integration		Network Analysis
Emergency Response		Asset Monitoring
SCADA	Network Planning	ADMS Integration

Benefits

Esri India created custom tools functionalities for BEST. These functionalities help the departmental users to get the desired work done, get reports, perform queries, display the desired information, and perform other GIS based operations.

- BEST is now equipped with robust data mapping capabilities along with network analysis & tracing functionality.
- Users are able to check network flow from Extra Higher Voltage (EHV) to Lower Voltage (LV) in a single click.
- The O&M team is able to find out the actual location of any electrical asset on the ground.
- Users can view feeder-wise networks from EHV to LV.
- Users can get details of the feeder trace as per the radial diagram.
- Users can get feeder-wise asset count along with positions of switching devices.
- Multifeed and Loop cases can be highlighted.
- The network can be maintained as per actual site conditions, for instance, open and close positions of electrical devices.
- Data can be disseminated easily across the organization's users in real-time.
- Functionalities like trenching save huge reinstatement charges.
- Hyperlink functionality helps users to view additional documents over the web such as drawings & sketches.
- The Enterprise GIS Application is ready to be integrated with other applications.

> The GIS application has significantly enhanced BEST's network planning by seamlessly integrating geographical features, administrative boundaries, and infrastructure into our visualization process. This spatial intelligence empowers us to make more informed and strategic decisions when planning network expansions, upgrades, and optimizations. The system's flexibility to generate customized reports and analyses on demand is a game-changer. It ensures that we have access to critical information wherever we are—whether planning in the office or using mobile devices onsite with field teams. Additionally, the integration with BMC's GIS system streamlines on-ground planning and decision-making for various BMC projects.
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> **- Sh. Sharad N Ughade, Director IT and Assistant Municipal Commissioner, Brihanmumbai Municipal Corporation.**