

UTILITIES DATA CONVERSION

Capability in utility mapping & planning



Case Study

Electrical Transmission Network
Electrical Distribution Network
Telecom Distribution Network
Water Supply & Distribution Network
Sewerage System
Gas Pipe Line Networks

Website

www.CartoSolution.com

Services Offered

Asset management
Electric Distribution
Gas Network
Water Distribution
Sewer Network
Stormwater Infrastructure
Telecom

Project Management System

About CartoSolution

CartoSolution is a global IT services company offering comprehensive technology solutions to business challenges faced by enterprises. CartoSolution is the IT arm of premier engineering consulting group having more than 15 years experience in the engineering, power and infrastructure sectors. Leveraging on the group's expertise, CartoSolution specializes in technology areas covering Utilities (**power, water, telecom, oil & gas etc**), Government agencies, Commercial and Industrial customers. CartoSolution also has strategic associations with global leaders in the utility domain for specialized technology products and services.

With effective data and technology integration, CartoSolution has gained global success stories from data conversion to database design, planning to implementation and maintenance. Our services group can relate information from different sources, build custom applications to enhance performance and deliver a full spectrum of GIS solutions.

CartoSolution has a development center in India (New Delhi) and employs 100+ specialist staff. The key personnel in CartoSolution have extensive experience in the engineering and information management sectors throughout Asia, Europe, Middle East and North America.

Based in the strategic location of Delhi NCR, India, the company offers complete offshore advantages to successfully execute large volume Geospatial projects.

Workshare Partners To The GIS/Utility Industry

CartoSolution is a leading workshare solution provider to the global GIS/ utility mapping applications. We have partnered with leading GIS/ Utility companies on over 100 projects in more than 10 countries. Our clients include leading GIS/Engg. Companies worldwide.

Expanding workforce of more than 100+ employees from the best schools and management professionals with years of rich experience in Fortune 500 firms

"An empowered organization is one in which individuals have the knowledge, skill, desire, and opportunity to personally succeed in a way that leads to collective organizational success. The product illustrates the great potential of our partnership with CartoSolution. This is great work, which is genuinely appreciated by us. Keep yourselves focused on maintaining this level of quality and purpose and you will achieve a well-deserved reputation."

- senior associate of a large US-based international Engineering firm

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“We are extremely happy with our frank, open, and honest relationship with our partners. CartoSolution capabilities in the technology business not only improved the time to market and predictability, but reduced the cost of implementation”

Jon Longcrier
President - Alexander Utility
Engineering, Inc.

“The core strength of Worksharing Partners is their dedication to quality delivery and customer satisfaction. Their can do attitude combined with the domain knowledge ensure that the customer expectations are consistently justified with our faith and confidence in our Partners”

Robert Jamieson
Director - Roussey Solutions, Inc.

Capability in utility mapping & planning

Electrical Transmission Network

- Transmission line routing using remote sensing and field survey
- GIS ready Base Map creation from hardcopy Topographic sheets
- Updation of Base map with recent Satellite data
- Land use/ Land cover interpretation from Satellite image
- Selection of optimized route using different route finding algorithms such as Least Cost, Shortest Route and other geo-environmental factors
- Digital Terrain Model and Fly-through generation
- Mapping of electrical transmission assets like sub-stations, transformers etc.
- Integration of Surveyed data into GIS platform
- Spotting optimized tower location using TL-PRO/ PLS-CADD
- Customized application development

Electrical | Telecom | Water Supply | Sewerage Distribution Network

- GIS ready Digital database creation from existing hardcopy paper prints of Base map and Electrical distribution network
- Large scale (1:1,000 scale) Base Map preparation from High Resolution Satellite data (QuickBird/ IKONOS)
- Surveyed data input from DGPS/ Total Station for Electrical Network and Assets into GIS and integration with various layers
- Network Topology for Electrical Distribution Network
- Integration with leading industry Database software (Oracle/ SQL server/ DB2)
- Consumer Indexing
- GIS interface with Metering & Billing system
- Application customization & Web enabling of application
- Integration with Water Supply Management System
- Integrated Water Supply development & management plans
 - Operation & Maintenance scheduling
 - Optimum site selection for Pumping/booster station
- Integration with Sewerage Management System
- Integrated sewerage development & management plans
 - Operation & Maintenance scheduling
 - Optimum site selection for Pumping/booster station
 - Site selection for Sewerage Treatment Plant
 - Sewage utilization plan



Secure IT infrastructure



Comprehensive Information Security

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Gas Pipe Line Networks

- Gas pipeline routing using remote sensing and field survey
- GIS ready Base Map creation from hardcopy Topographic sheets
- Updation of Base map with recent Satellite data
- Digital Conversion of existing Engineering drawing/ Cadastral sheets/ Crossing details/ Pipe book from hardcopy maps into GIS and linking of attributes
- Land use/ Land cover interpretation from Satellite image
- Selection of optimized route using different route finding algorithms such as Least Cost, Shortest Route and other geo-environmental factors
- Digital Terrain Model and Fly-through generation
- Integration of Surveyed data into GIS
- Preparation of Emergency plan
- Integrated Gas-Pipeline Information System
- Application customization and Web-enabling of application

Overview of Quality Practice at Intec:

- The purpose is to ensure the effective functioning of the Quality practice, in thoughts and execution: Assurance & Control process by ensuring compliance to standards during execution of a particular service or a set of services. Each constituent process of a particular service is to comply with standards & requirements as documented in the standard quality manual and project specific processes.
- Measurements are carried out on quality parameters associated with various phases of the project like Project Specifications, Team identification, Training, Production, Project Monitoring and Reporting, Testing, Delivery and Change management.
- Compliance to each process is an essential requirement towards fulfilling the requirements of the Quality management system.
- The set of processes that are required to be executed to achieve the accepted pre-defined objective or service are well documented. Each process is documented as also the inter-relationships between processes defined and described.
- The Director-in-charge/CEO is responsible for the company Quality Policy and the hierarchy for issue resolution is well defined at the start of the project.
- Project Manager ensures that all team members are well equipped with software knowledge and have access to right hardware resources for completing the project within the defined guidelines.
- In the event that a suitable process is not available, the GIS Head ensures that the procedure for incorporating a new process into the system is complied with as laid down in the manual.
- The GIS Head is responsible for ensuring External/ Internal Audits, Management reviews, reduction of non-conformances, reporting on the status of action taken on implementation of solutions: corrective and preventive actions.

CASE STUDY

Sewerage & Drainage Mapping Network Nottingham City Council, UK

www.nottinghamcity.gov.uk

A renowned UK based company providing digital mapping, planning, environmental risk information and geospatial solutions, chose Intec to map sewer network system for Nottingham City Council, UK. The GIS enabled Information System for Sewage and Drainage system has a great importance to the City council. Although the city council has a GIS program that has been in place for over last few years, they were looking to increase the functionality of their GIS to use in multiple sectors.

Objective:

- Capture data relating to Foul Water Sewers and respective Inspection Chambers as a part of their drainage/ sewerage system.
- Data will need to be viewed on a GIS application to allow quick and easy search, display and interpretation of information throughout the city.
- Integrated Water Supply development & management plans

Challenge:

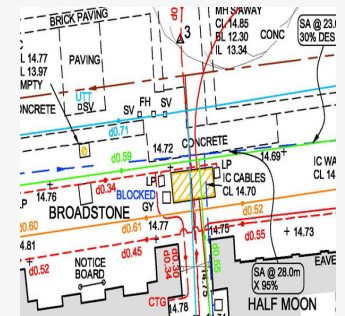
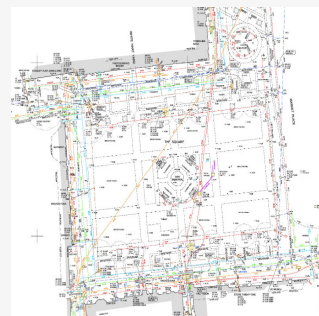
- Most of the input hard copy sewer map data was 40 to 50 years old resulting in poor quality of paper data
- In many cases there was more than 40% overlap in paper maps
- Lot of changes between hard copy drawings and latest OS Mastermap due to time gap
- Legend in the hard copy maps not consistent
- Index sheet for the drawings not available

Services:

- Prepared the index map for the drawing files
- On the basis of intersecting road junction which are common in both hard copy drawings and OS Mastermap data, geo-referenced the paper drawings in best fit process.
- Captured Inspection chambers and sewer pipelines from the hard copy paper drawings
- Data conversion consisted of precision placement of sewer network features from the prepared source documents onto a digital OS Mastermap
- As the features were placed, a non-graphic database was populated either manually by a technician, or automatically via programs within the placement routines.
- Each graphic feature placed was automatically assigned a unique identifier which links it to its non-graphic database record.
- Generation of sewer network connections

Benefits:

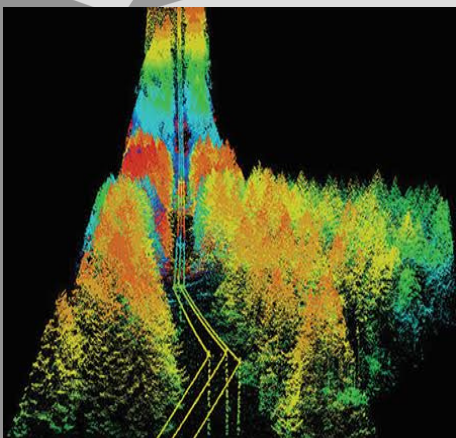
- This allowed the planner to focus on the study of different scenarios in order to identify the most cost effective network development plan
- Efficient asset tracking for regulatory reporting and maintenance programs
- Improved customer response
- May be used as an analysis tool for future sewer system design of the city



CASE STUDY

Power Grid Corporation India Ltd (PGCIL) India

www.powergridindia.com



POWERGRID, one of the largest Transmission Utility in the world and India's largest CTU has been erecting and operating India's regional and national electrical power grids. Presently the company owns and operates about 50,745 ckt kms of transmission lines at 765 kV, 400 kV, 220 kV & 132 kV, ± 500 kV HVDC levels and 85 sub-stations with transformation capacity of about 49,459 MVA. Availability of its transmission system is being maintained consistently over 99% on an annual basis by deploying best Operation and Maintenance practices at par with the International utilities. About 40% (i.e. >200 BUs) of total power generated (i.e. >500 BUs) in the country is being transmitted over POWERGRID owned transmission network.

Objective:

- Identification of 3 alternative route alignments & selection of optimized route alignment along 2,500 km stretch
- Digital terrain modeling along the selected route using contour data from Topographical maps
- Detailed Survey through ground using GPS, Total Work Stations, long range scanners and Digital Theodolites
- Digitising profile along the selected route along with plan details
- Computer aided Tower spotting & optimization

Challenge:

- Most of the input hard copy sewer map data was 40 to 50 years old resulting in poor quality of paper data
- In many cases there was more than 40% overlap in paper maps
- Lot of changes between hard copy drawings and latest OS Mastermap due to time gap
- Legend in the hard copy maps not consistent
- Index sheet for the drawings not available

Project:

- **Transmission Line Route Optimization using GIS, Remote Sensing & Survey**

Services:

- GIS ready digital Base Map creation from hardcopy Topographic sheets covering 8 kms on either side of the identified corridor
- Updation of Base map with recent Satellite data Landuse/Landcover interpretation from Satellite image
- Selection of optimized route using different route finding algorithms such as Least Cost, Shortest Route and other geo-environmental factors
- Digital Terrain Model and Fly-through generation
- Integration of Surveyed data into GIS
- Spotting optimized tower location using PLS-CADD
- Report generation

Benefits:

- Based on the optimised route suggested, Client managed to cut short the transmission line length by 56 kms with a cost saving of \$200,000
- GIS database provided the Client an instant and single source access on complete route which improved decision making between various departments and helped in optimising BOM while ordering erection material
- Delivered maps in digital format can later be used by O&M and also get integrated with sub-station data.