

CorridorTrak™

CorridorTrak™, the first of its kind in the sector, offers a GIS-based solution for simplifying complex alternative scenarios. The program gives the user complete control to select the variables to be considered in a scenario and places no limits on the variables or alternatives in the project area. CorridorTrak™ provides reporting and case history management tools, thereby providing a complete documentation of the process.

CorridorTrak™ significantly reduces the manual efforts required in identifying, evaluating and ranking alternatives. The ultimate goal of the system is to provide decision-makers with the ability to select an alternative based on evaluations of the sum of both positive and negative projected impacts of the alternative on the project area. Our approach involves an application of state-of-the-art clustering algorithms and innovative scheduling heuristic. A significant innovation involves generating accurate impact variable estimates in the alignment design phase using routing algorithms.

Alternative Evaluations For:

- * Roadways
- * Rural and Urban Servitudes
- * Petroleum Pipelines
- * Flood Mitigation Systems
- * Gas Pipelines
- * Rail Networks
- * Water Pipelines
- * Transmission Lines
- * Waste and Storm Water Diversion Systems

The **CorridorTrak™** evaluation method includes direct and indirect impact variables that are user-specified and rated. These variables can include environmental, archeological sites and drainage, ecological, social, economic, local, soil, geology, terrain, noise, previous surveys, standing structures, national wetlands inventory, scenic rivers, timber management areas, existing and future land use, flood zones, unique areas, threatened or endangered species and/or their habitat, and construction cost. Decision-makers are able to evaluate alternative scenarios by specifying and rating each specified impact variable. **CorridorTrak™** computer-aided optimization evaluation method allows each alternative to be generated, ranked by "Ordinal Score", and displayed visually on a map. When decision-makers specify new impact variables and/or revise the ratings of the specified impact variables, new alternatives can be generated, ranked, and displayed. Each alternative can also be printed graphically and in a tabular form to hard copy. Users are able to prepare professional quality maps for both documentation and display purposes.

Advantages to Using a GIS-Based Solution:

- * The GIS approach facilitates very accurate distance, impact, and cost and travel time computation on a true street network by using their respective latitude/longitude coordinates in real space, providing for very precise calculations
- * The system is map-based and the level of network detail incorporated into each alternative is very high. By utilizing the database functionality inherent to this data format, decision-makers can also specify complex impact variable attributes. Construction costs, construction time, relief provided on other portions of the network, logical termini and construction zones can all be included in the analysis and in the end-product.
- * GIS provides a visual environment for the analysis. This graphical presentation is a reflexive component of any alternative. All facets of the analysis take place in a visual and interactive environment, from preparing the input data to analyzing the alternatives. This relates problem formation and solution in a powerful way. Displaying input data both during the modeling and with the solution offers a powerful methodology for error checking.
- * This method of data presentation facilitates user understanding and comprehension, whereby decision-making is enhanced. The visual environment provides a means of conveying highly technical information to the non-practitioner in a very straightforward and understandable manner.

For the decision-maker, this approach provides a graphical verification that is both intuitive and useful. The ability to graphically view alternatives allows decision-makers to determine when an error in calculation or assumptions yields an alternative that "looks wrong" or "is wrong". And, of course, if direct or indirect impact variables change, editing the underlying database can change the solution. The proprietary heuristic used by DBSysgraph is complex and robust. Some of the algorithms used in the process are the Bellman Ford Algorithm, Dijkstra's Algorithm and the Topological Ordering Algorithm.

CorridorTrak™ integrated decision-support system for the transportation sector merges GIS with a transportation network, impact variables, travel time delay, relief and impact on travel time, accident reduction, noise, emissions modeling, and queuing models. The system provides for seamless integration with the transportation models of TNM, TripGen, Mobile 6, CAL3QHC, and CALINE4. For roadway design, the system allows decision-makers to work with alignment widening or impact minimizing scenarios. The system generates a "least impact alignment" with route start and endpoints as well as way points in between.

Through a simple process, the system analyzes various man-made and natural impact variables (NWI, Flood Zones, Zoning, Building Structures, Soil Type, Traffic Impacts etc.) and allows decision-makers to select various combinations of variables most critical to each test scenario. Variables to consider in the analysis of an alternative may also include existing roadway conditions, utilities, railroad crossings, topographic features, traffic patterns, permits, land use, community/social, economic, historic, cultural, recreational, archaeological, noise, air, wetlands, flood plains, farmland, and endangered or threatened species and/or their habitat. Because wide-ranging variables are able to be analyzed, the chosen alignment should not only keep direct/indirect impacts to a minimum but should also aid in keeping project costs down. The goal of the system is to simultaneously minimize environmental, archeological, cost, and ecological impacts on a region while maximizing social and economic impacts.

Key Benefits and Features:

- * Comprehensive reporting tools.
- * Ranks alternatives based on "Ordinal Scores".
- * Performs analysis in accordance with NEPA guidelines.
- * Creates final design documents for engineering purposes.
- * Publishes maps and reports to the Internet with just one click .
- * Evaluates and optimizes public/stakeholder identified alternatives.
- * Allows for projections of travel demand if the alternative is built.
- * Generates a virtual representation of the final alignments as a 3D movie.
- * Evaluates and projects impact population and other socio-economic data.
- * Customizable interface for computing direct and indirect impacts of each impact variable.0
- * Summarizes the direct/indirect impacts in generating an "Ordinal Score" for each alignment
- * Promotes interaction with special interest groups in identifying the "least impact alignment".
- * Displays existing traffic and overlays projected travel demand with traffic mitigation component.
- * Generates an optimized alternative based on impact variables and designated FROM and TO zones.
- * Provides engineers and architects with critical volumetric and quantitative computations, in documenting the alignment "elimination process".
- * Generates reports for specified variables in each alignment scenario for documentation of the "elimination process" for each special interest group.

CorridorTrak™ works with most GIS data sets, native mapping format is in ESRI, **DBS** offers all-inclusive consulting and implementation services to assist in data acquisition, data conversion, application development, systems management and ongoing database development and management. Allow **DBS** to introduce the simplified power of the CorridorTrak™ decision-support system as your complete **Corridor Optimization Evaluation Method**. Employ innovative evaluation techniques, reporting, project management and case history management tools of CorridorTrak™ in the comprehensive evaluation and documentation of your project.

Other DBSysgraph products that integrate with and compliment **CorridorTrak™** functionality are:

- PaveManager™** (Pavement Conditions Evaluation Solution)
- CMS Pro™** (Congestion Management Solution)
- OrderTrak™** (Work Order Management Solution)
- SSIMS™** (Sign/Stripes Inventory Solution)
- TSIMS™** (Traffic Signal Inventory Solution)