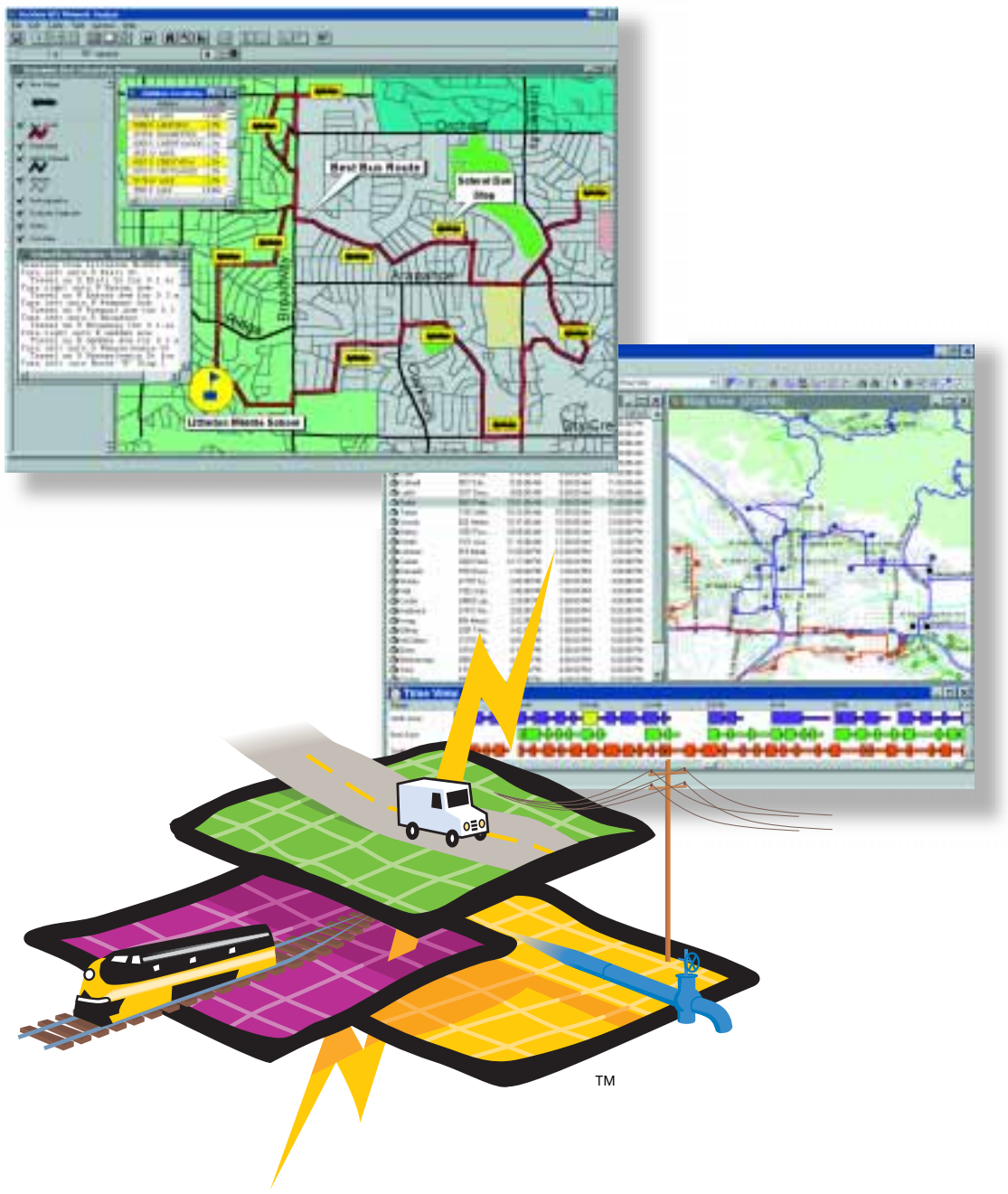


Introducing. . .

NetEngine™

A Programmer's Library for Network Analysis

NetEngine™

A Programmer's Library for Network Analysis

What Is NetEngine?

NetEngine™ software is a programmer's library designed for geographic network analysis such as networks defining streets, railways, utility and distribution facilities, or rivers. NetEngine provides the programmer the capability to define, store, traverse, and analyze many kinds of networks through either a C application program interface (API) or Visual Basic® via a type library. Using NetEngine software, developers can more rapidly and economically deliver powerful software solutions to customers or end users who need functions such as pathfinding, site analysis, facility connections, and tracing of network topology.

ESRI's ArcView® Network Analyst uses an earlier version of the underlying NetEngine technology and has thousands of satisfied users. These screenshots illustrate a public transit route accessibility application and a vehicle routing application.

Typical Geographic Feature Networks Used with NetEngine

- Streets
- Highways
- Railways
- Bus Routes
- Street Sidewalks
- Bike Paths
- Shipping or Air Connections
- Warehouse and Store Aisles
- Campus and Hospital Corridors
- Electric Distribution
- Telecommunications
- Cable or Wiring Systems
- Gas Pipelines
- Water and Sewer
- Rivers and Streams
- Canals

How Can NetEngine Be Used?

NetEngine is very flexible and has been designed for a single or multimodal network facility. For example, using a "traveling salesman problem" (TSP) algorithm included in NetEngine, developers can relatively quickly deliver basic vehicle routing solutions. Using more advanced functions and algorithms of their own design, developers can build solutions that route across multiple transportation modes. Complex situations, such as identifying the "least-cost, on-time" alternative for routing an intermodal container through transfer points between truck, rail, and shipping networks, can be modeled with efficiency and confidence. Transit providers can identify effective alternative routes using bus routes, subways, rail, and even city sidewalks to walk between two "nonconnected" bus routes.

What Does NetEngine Do?

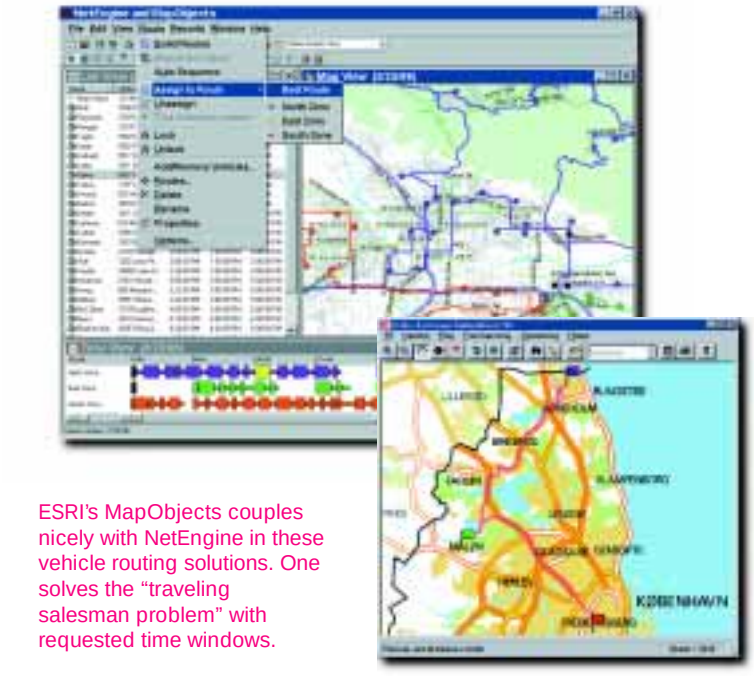
NetEngine gives programmers the direct capability to define, store, traverse, and analyze networks that represent geographic features, either natural or artificial, physical or logical. NetEngine programs can store and manipulate very large physical networks such as the entire highway and street network for a state or country. NetEngine provides a specialized memory management module, giving the programmer access to network representations larger than the virtual memory available to a particular computer.

NetEngine is delivered with algorithms for determining the shortest path between two or more points, the solution to the TSP, the identification of the closest facility, the computation of origin–destination distance matrices, and the allocation of service areas to a location. NetEngine builds network topology and stores it on a local disk drive, then allows rapid exploration of the network through a "Fast Forward Star" network cursor.

NetEngine can be used to deliver information over the Internet. This screenshot shows service vehicle routes through ESRI's MapCafé™ software, a Java™ applet included in ArcView Internet Map Server.

Where Does NetEngine Operate?

NetEngine operates in a number of UNIX® environments, as well as the Windows 95® or Windows NT® environment. Its primary access is through a C API, but other environments can be accessed through a type library.



ESRI's MapObjects couples nicely with NetEngine in these vehicle routing solutions. One solves the "traveling salesman problem" with requested time windows.

What Else Is Required?

Primarily, a network database must be provided. For large facility managers, such as for an electric utility, this network will be provided internally. For vehicle routing, developers may license street databases from commercial suppliers (refer to ESRI's ArcData℠ Catalog). By creating a "loader" program for their network database, the programmer takes advantage of those parts of the database required for the solution in mind, enabling NetEngine to provide a traversable discoverable topology. Examples of commercially available street databases include offerings from Etak®, GDT, Navigation Technologies, and Wessex.

Typically, the developer will include a graphical representation of the network and the solution identified (e.g., the least-cost route over streets), although this is not required. NetEngine works well with ESRI's MapObjects™ software, another software development product, which combines an ActiveX® control (OCX) and over 30 programmable ActiveX automation objects. In addition to displaying maps, networks, and routes or paths, MapObjects also gives the programmer access to a powerful address geocoder and a real-time event tracking layer. Integrated route planning, vehicle scheduling, and dispatch tracking systems become easier to build.

For more than 25 years ESRI has been helping people manage and analyze geographic information. ESRI offers a framework for implementing GIS in any organization with a seamless link from personal GIS on the desktop to enterprisewide GIS client/server and data management systems. ESRI® GIS solutions are flexible and can be customized to meet the needs of our users. ESRI is a full-service GIS company, ready to help you begin, grow, and build success with GIS.

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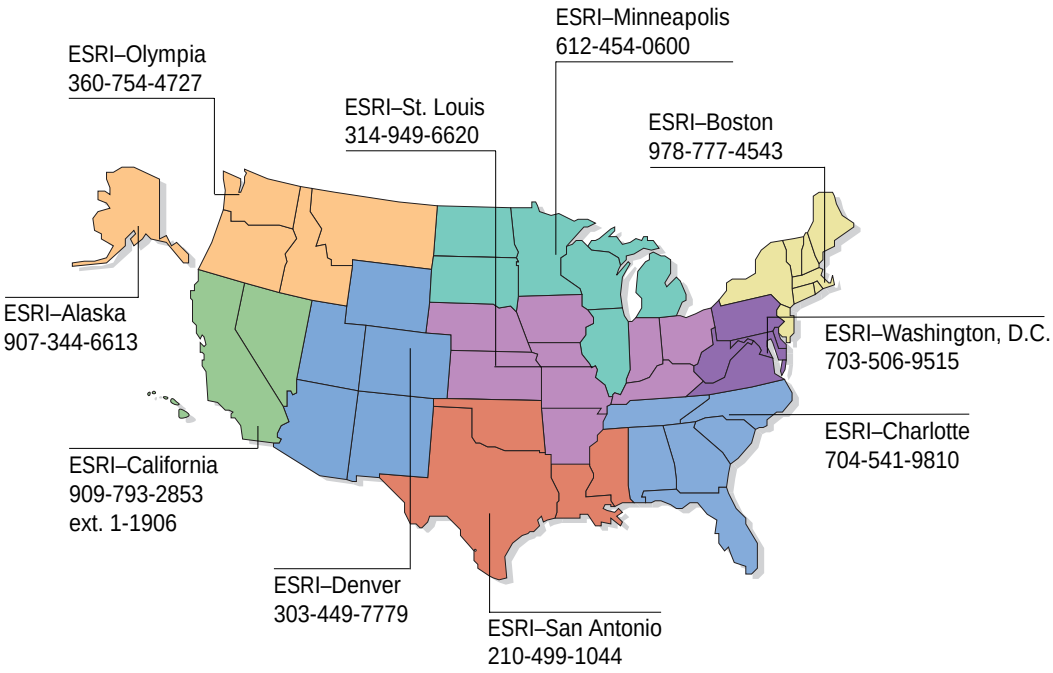

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