

### Release Plan

The first release of **TOP** is planned for February 2001. This release will contain:

- An object model integrated into the Geo-database to store transportation related data
- Software components to maintaining the integrity of the object model
- Visualization tools for non-geographic objects such as turns, interchanges at transit terminals and timetable data
- Visual tools for creating, editing and analyzing timetables
- Path finding tools for timetable based networks
- Versioning features for managing scenarios
- Translation modules to and from the EMME/2 transport modeling package
- On-line documentation
- And much more

From then on, **TOP** will be expanded and revised as part of an ongoing development process:

- The object platform will be extended to meet more advanced demands
- More tools for analysis, modeling and visualization are planned
- A new module for simulation of rail traffic capacity and regularity is planned
- Various environmental impact models will be made available for purchase when ready

### ScanRail Consult

ScanRail Consult is the leading railway consultant in Scandinavia. The GIS & Software Development Group specializes in the development of tools for traffic and transport planning.

ScanRail Consult has practical and theoretical experience from a wide range of projects in the transportation field, most of which have used GIS-technology extensively:

- Modeling transport volume and distribution
- Modeling the socioeconomic and environmental impacts of transport
- Railway infrastructure modeling in GIS
- Development of focused GIS applications

ScanRail Consult is an ESRI International Business Partner.

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### Intelligent Management of Multi Modal Network Data

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# TOP Transportation Object Platform



### What is TOP?

- The Transportation Object Platform - **TOP** - is an easy-to-use GIS data platform for storing and maintaining multi modal transportation and infrastructure data.
- With **TOP** you can directly visualize all your complex transport network data from roads to timetables.
- Use the excellent editing features of ArcMap to edit your data in **TOP**.
- Take advantage of the advanced, integrated tools of **TOP** for transport modeling and analysis.
- **TOP** is an extension to ArcInfo 8 built on ArcObjects and is open and extensible.

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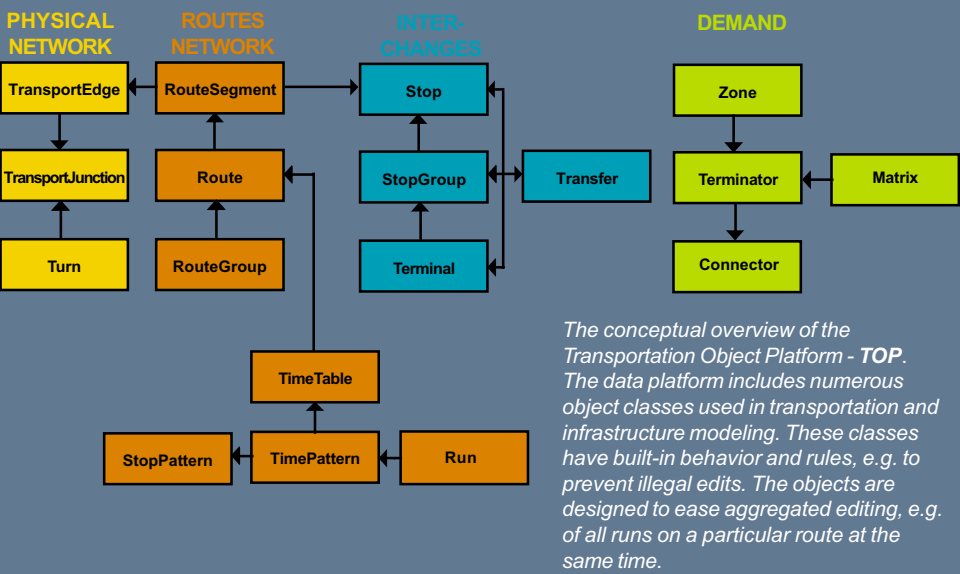
## The Transportation Object Platform, TOP

The *Transportation Object Platform*, **TOP**, is developed in order to easily store and maintain transportation related data, such as infrastructure data, timetables etc. **TOP** provides a strong GIS-based solution for transport planning authorities, infrastructure owners, operators and their customers, as well as for application developers and consultants for such organizations.

**TOP** is an open and extensible object model, created as an extension to the ArcInfo 8 Geodatabase. The COM components of **TOP** are custom behavior classes in the Geodatabase. This makes it possible to implement enforced intelligent relations between objects in **TOP**. These relations apply to all applications, which are clients of the platform.

By using ArcMap to edit geographic and tabular objects, data editing tasks are eased while the full topological complexity of any transport related data model is retained by **TOP**.

**TOP** provides a suite of related tools for modeling, analysis and presentation purposes, tools to edit, manage and maintain complex multi-modal network data, stored in the Geodatabase. These data include physical networks, public transport routes, stopping patterns, schedules, interchanges, terminals, etc.



## Advanced Features

**TOP** is a data management foundation for complex analysis applications, such as comprehensive multi-modal transport models, accessibility studies, timetable optimization and evaluation tasks, etc.

**TOP** also includes tools for handling demand data, such as trip-matrices and freight delivery tables. Furthermore, **TOP** has add-on visualization and editing tools for complex objects, such as terminals, routes and timetables.



The Transportation Object Platform features tools for the advanced display of results from transportation modeling applications, e.g. bundles of routes or paths, which use a certain network segment (top) or optimal routes based on different criteria (left). Other examples are sheaves of routes between two locations, transfer patterns and average waiting times in a terminal, travel times, accessibility, and competition between modes.



## Scenario Management

The Transportation Object Platform will, by using the versioning facilities in the ArcInfo 8 Geodatabase, intelligently handle the interaction between these three different types of data validity:

- Scenarios
- Periods
- Versions

Scenarios are hypothetical collections of data with distinct characteristics that a planner wants to compare, such as the construction of new infrastructure versus the increasing of service frequency.

A period is a particular period of time, unique or reoccurring, such as Fridays, the morning rush, or the time between July 1st, 1999 and July 15th, 2000.

Periods are used in timetable data and to model congestion on the road network. Versions describe the progression of a dataset as the planner makes edits to it, either to establish it or to correct errors.

## The Traditional Problems

The traditional way of handling data in transport models suffers from a number of fundamental problems. These problems are, among others:

- A non-intelligent data model makes it difficult to edit and enforce integrity in the data
- The lack of display tools for complex topologies makes it difficult to visualize data
- The lack of proper tools for scenario management makes it difficult to handle different scenarios
- Different data formats from different vendors lead to numerous one-time translation and aggregation tasks

These problems lead to a very complex and time demanding workflow.

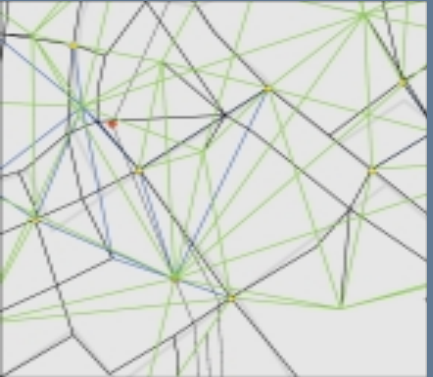
## The New Solution

With the introduction of the ArcInfo 8 Geodatabase and ArcObjects an elegant way of solving all of the mentioned problems is possible.

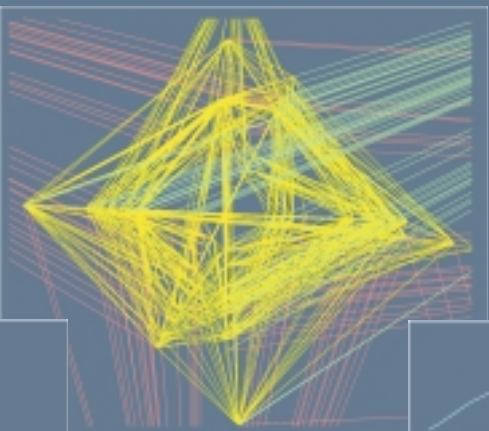
The solution is to create an intelligent, open and extensible object platform for transportation as an extension to the Geodatabase. This is exactly what **TOP** really is.

The features of ArcMap can be used to edit the data model while retaining the full topological complexity.

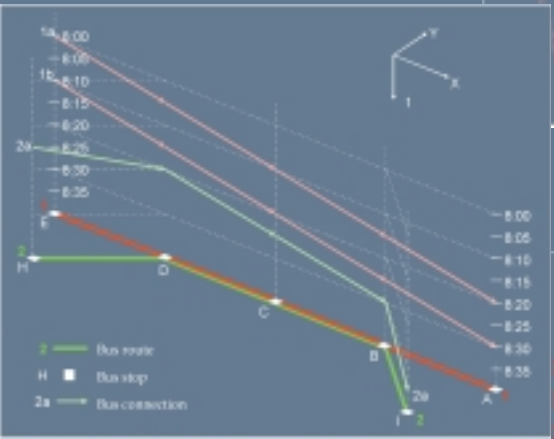
The required integrity constraints are defined, implemented and enforced in the Geodatabase, i.e. they will apply to all applications, which are clients of the platform.



Are you tired of the abstract art of editing graph-oriented transport models? (Above) Try using the Transport Object Platform, fully integrated with ArcInfo. (Left) The two pictures actually show the same network.



Have you ever tried building a graph-oriented data model to attempt to model interchange possibilities at a terminal? (Left) It's just not that handy. How about being able to visualize your complex data in 3D? (Below) The Transportation Object Platform - TOP and ArcInfo 8 makes it all possible.



Have you ever thought of visualizing a timetable schematically in 3D? (Above) Then try to add the geography. (Right) It's really great for quality control. With TOP you'll get an excellent view of your most complex data.

