



# Office of Technology Management

## *Origin-Based Assignment A Solution Algorithm to the Network Transportation Problem*

### Technology Reference

CT023

### Contact

Ajith Joseph  
Office of Technology Management  
1737 West Polk  
Suite 312 AOB  
MC 682  
Chicago, Illinois  
60612

[ajoseph@uic.edu](mailto:ajoseph@uic.edu)

Phone: 312-413-1430

Fax: 312-996-1995

### Inventors

David Boyce

Hillel Bar-Gera

### Field

Transportation

Urban planning

### Key Words

Transportation planning

Traffic networks

Urban planning

Roads

Highways

### License Status

Seeking licensing partners

### Overview

Most solution algorithms for this problem are either link-based or route-based. In the algorithm described in this invention, an origin-based approach is implemented. In this approach, all of the destinations for each origin are considered together, and the routes serving them are efficiently identified and optimized. The computational efficiency in terms of time and memory make this method suitable for large-scale urban networks of practical interest to transportation professionals.

### Technical Summary

The transportation network assignment problem is to allocate the fixed demand from origins to destinations to routes of a network according to a given behavioral hypothesis, such as that each user seeks to minimize the cost of their chosen route.

### Benefits

- Differs from alternative methods by basing the solution on the origin of the trip rather than the routes or links.
- This allows more rapid convergence to a solution
- There are only a limited number of transportation software planning companies worldwide.

### Areas of Application

- Transportation planning
- Transportation network modeling

### Stage of Development

- An executable file with directions for use and a sample solution are available.
- Experimental results obtained to date for large and medium sized networks demonstrate that the new method is especially efficient for finding highly accurate solutions of the problem.