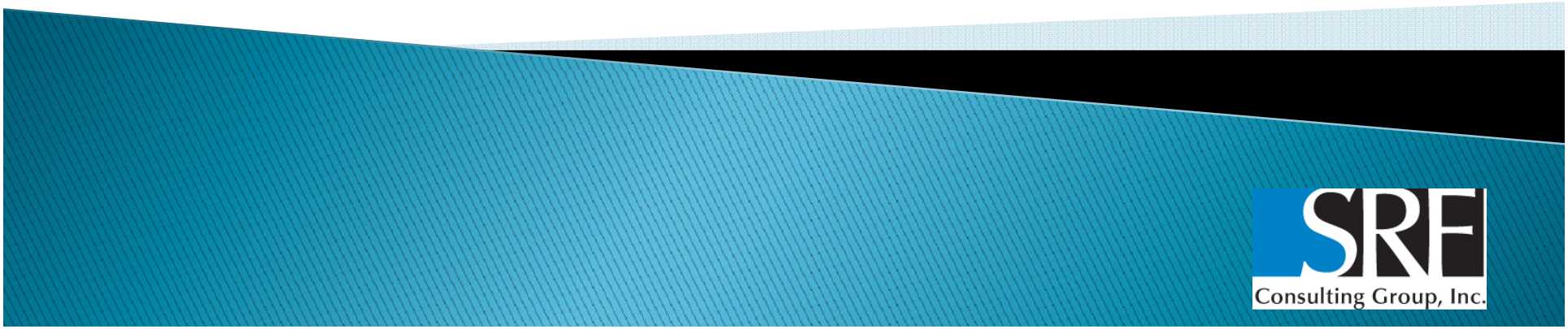
Dynamic Traffic Assignment

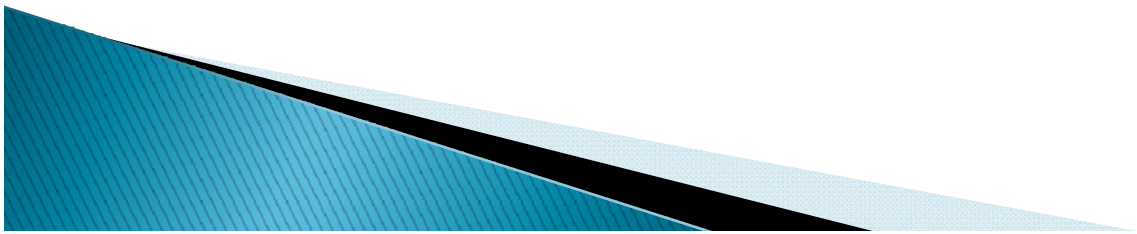
Emerging Tool to Meet Emerging Policy Needs

Steve Wilson
SRF Consulting Group, Inc.



In an Hour……

- What is Dynamic Traffic Assignment (DTA)?
- How it is Different than Static Traffic Assignment?
- What is it Good For (Applications)?
- Why Isn't Everybody Using it Now?
- What Does it Look Like?
- Where Can I Get DTA Software?



SRF Consulting Group, Inc.

A Primer for

Dynamic Traffic Assignment

ADB30 Transportation Network Modeling Committee
Transportation Research Board

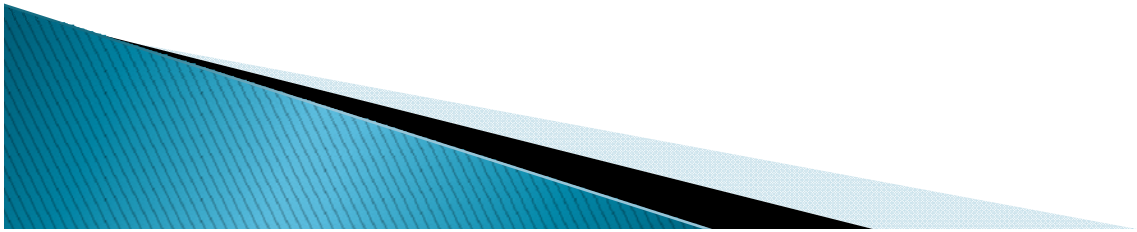
2010

TRB
THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

SRF
Consulting Group, Inc.

What is Dynamic Traffic Assignment (DTA)?

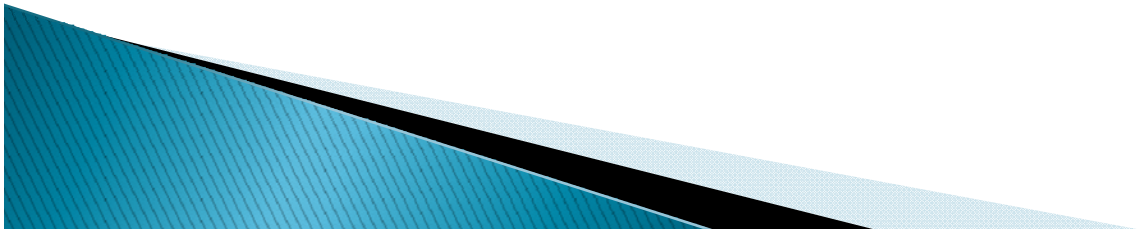
- Mesoscopic Traffic Assignment
- Not Macroscopic (planning)
- Not Microscopic (operations)



SRF Consulting Group, Inc.

How is it Different from Static Traffic Assignment?

- Simultaneously assign all trips along entire route from origin to destination along minimum time path
- Adjust travel time on link based on V/C function
- Reassign all trips along entire route from origin to destination along minimum revised time path
- When answer doesn't change very much, stop



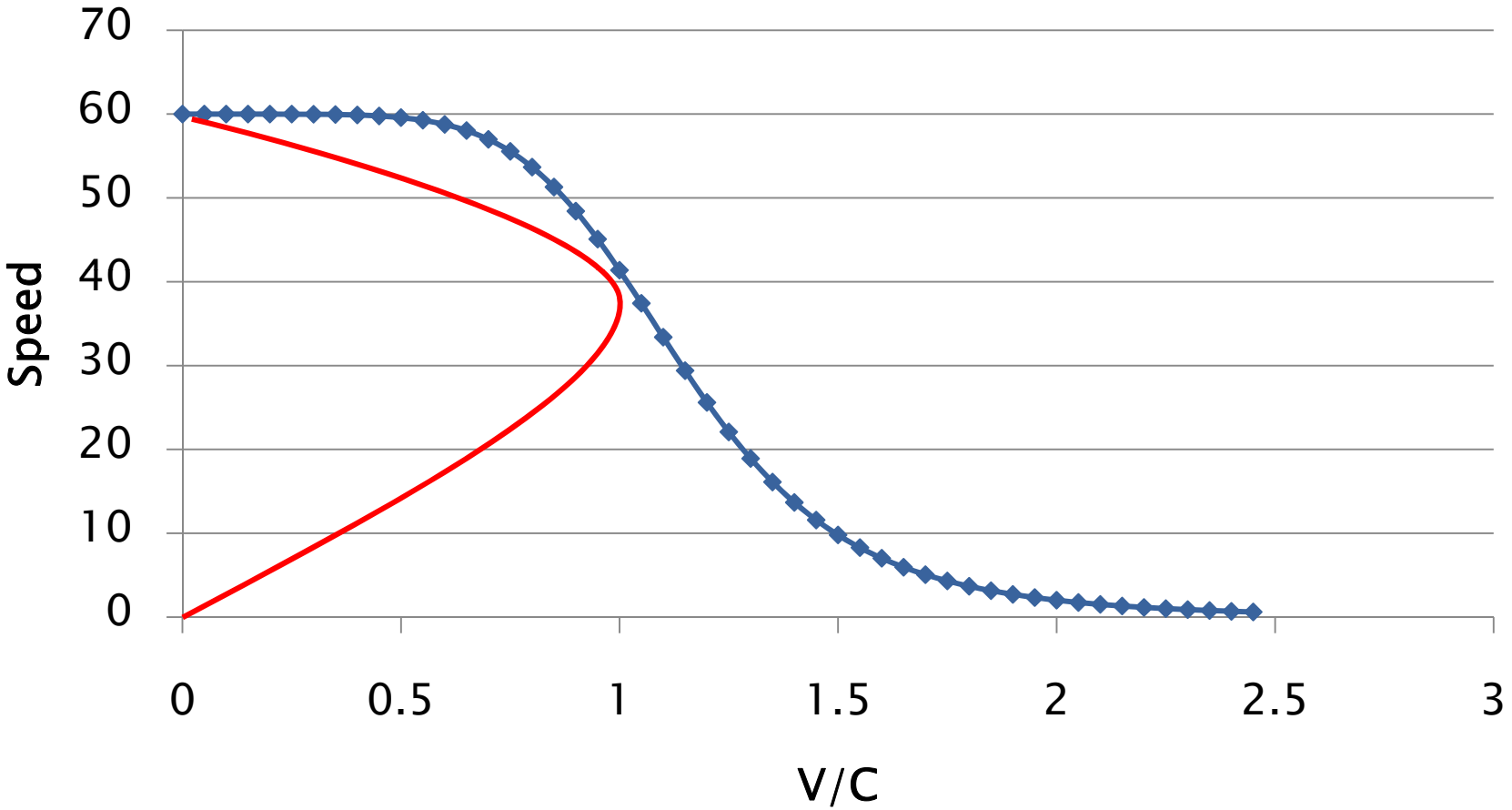
SRF Consulting Group, Inc.

How is it Different from Static Traffic Assignment?

- Trips may be assigned by 'time slice':
- Daily
- Period (a.m. peak, offpeak, p.m. peak, etc.)
- Hourly
- Portion of Hour (15-minute increments, etc.)
- Simultaneously assign all trips along entire route from origin to destination
- Information NOT RETAINED between slices
- Volume-dependent relationship

SRF Consulting Group, Inc.

Traffic Flow Realism



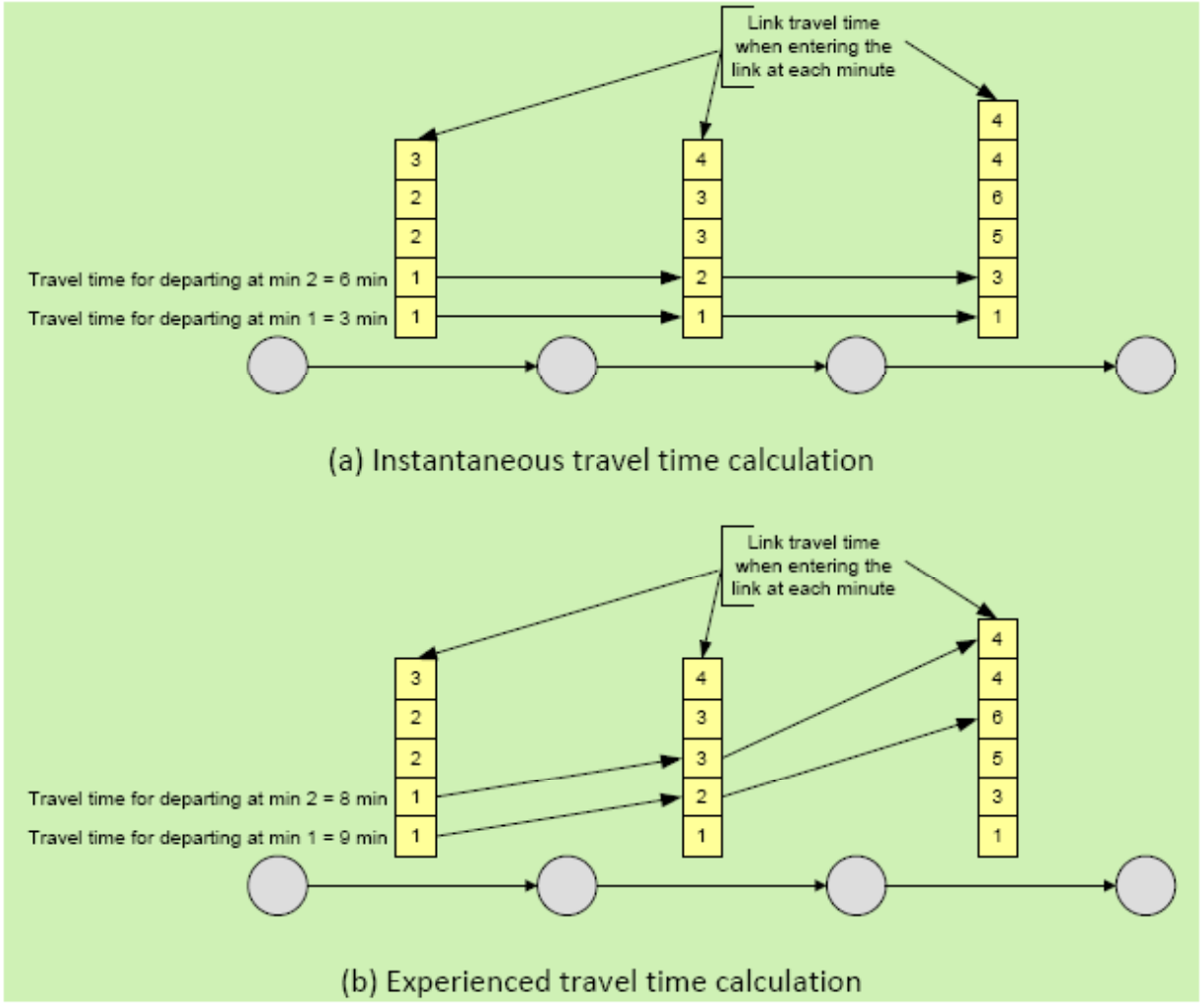
SRF Consulting Group, Inc.

What is Dynamic Traffic Assignment (DTA)?

- "Experienced" travel time
- Time-dependent
- Queuing
- "Spillback"/Blockages
- Speed/flow relationship

Consulting Group, Inc.

Experienced/Time Dependent Paths



Source: A Primer for Dynamic Traffic Assignment , ADB30 Transportation Network Modeling Committee Transportation Research Board (2010)

SRF Consulting Group, Inc.

What is it Good For (Applications)?

- Advanced practice travel demand models
- “High level” operations analysis
- Parallel/multiple corridor conditions
- Pricing/HOT/toll lanes
- System management alternatives
- Work zone planning

What is it Good For (Applications)?

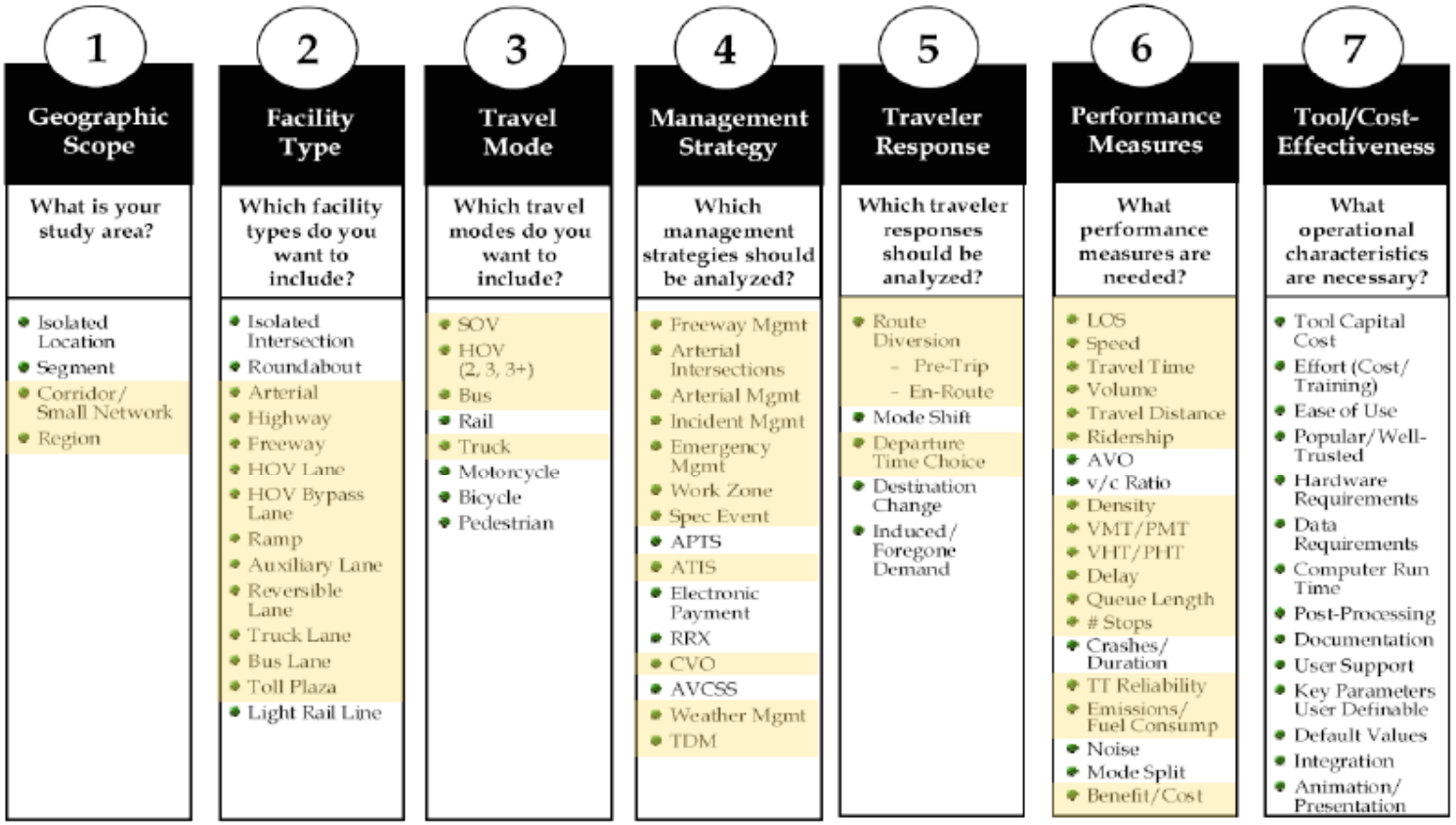
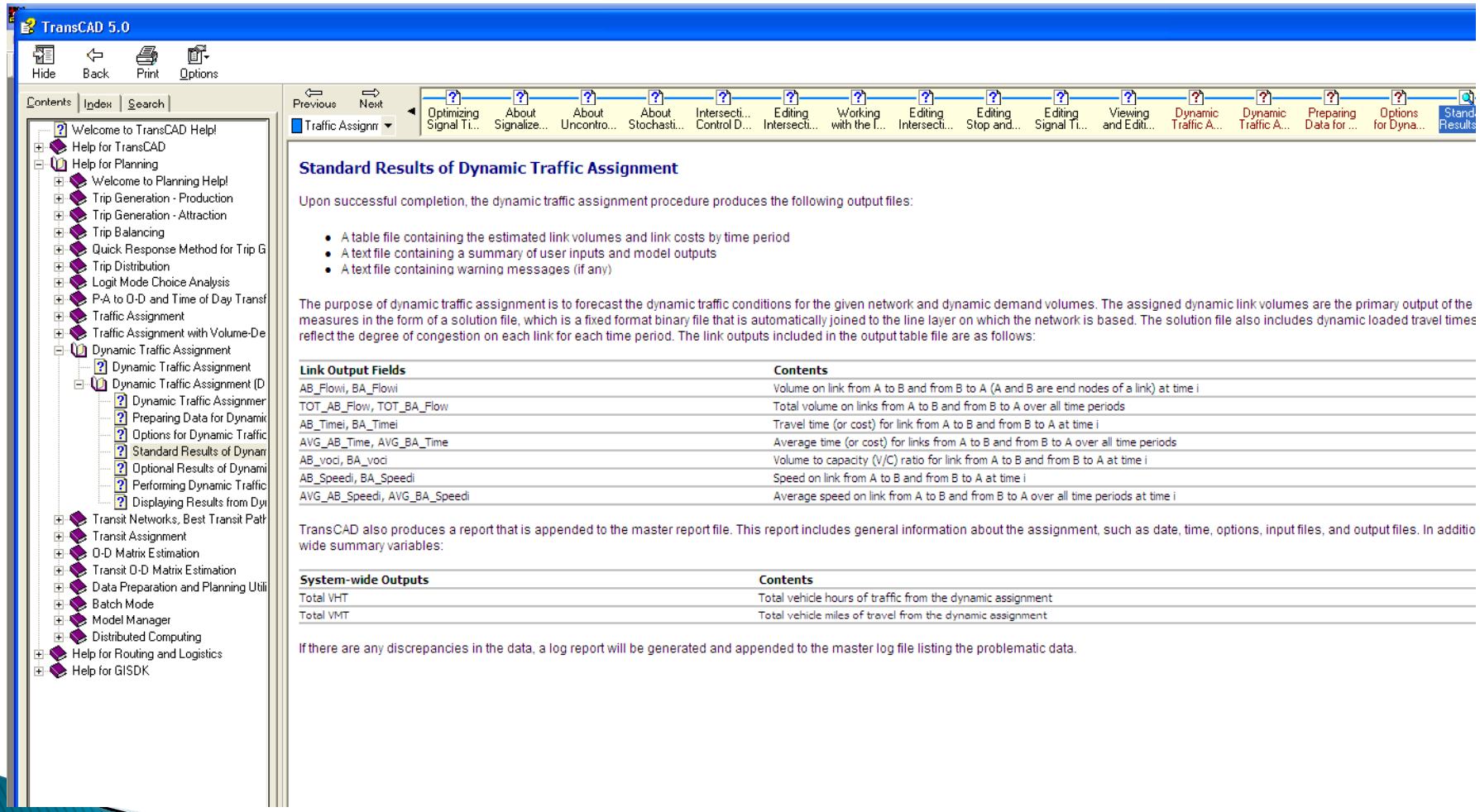


Figure 3.1: General decision making process for selecting traffic analysis tools [66]

Source: FHWA, *Traffic Analysis Toolbox Volume II: Decision Support methodology for Selecting Traffic Analysis Tools. 2004*

SRF Consulting Group, Inc.

DTA in TRANSCAD



SRF Consulting Group, Inc.

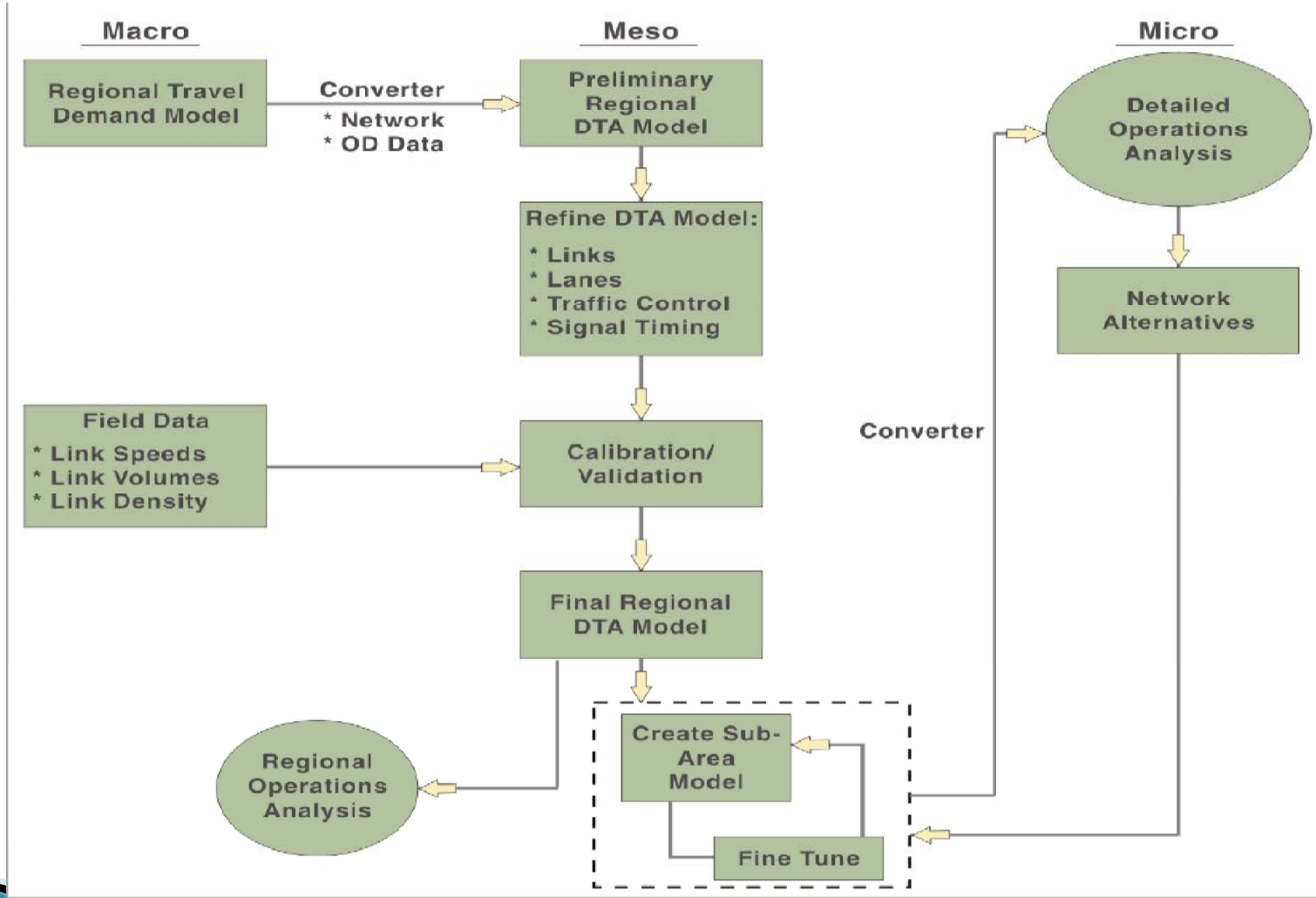
Why Isn't Everybody Using it Now?

- Lack of Awareness
- Diverging Opinions
- Computer Processing
- Need
- Data Requirements for Validation

Implementation

- Conversion of Regional Model
  - Network Detail
  - Traffic Signals/junctions
- Conversion of OD Matrix
  - Typically Subarea
  - Extract from Regional Model
  - Time slices (estimated)
- Calibration
  - Volumes
  - Speeds
  - densities

Multi Resolution Modeling

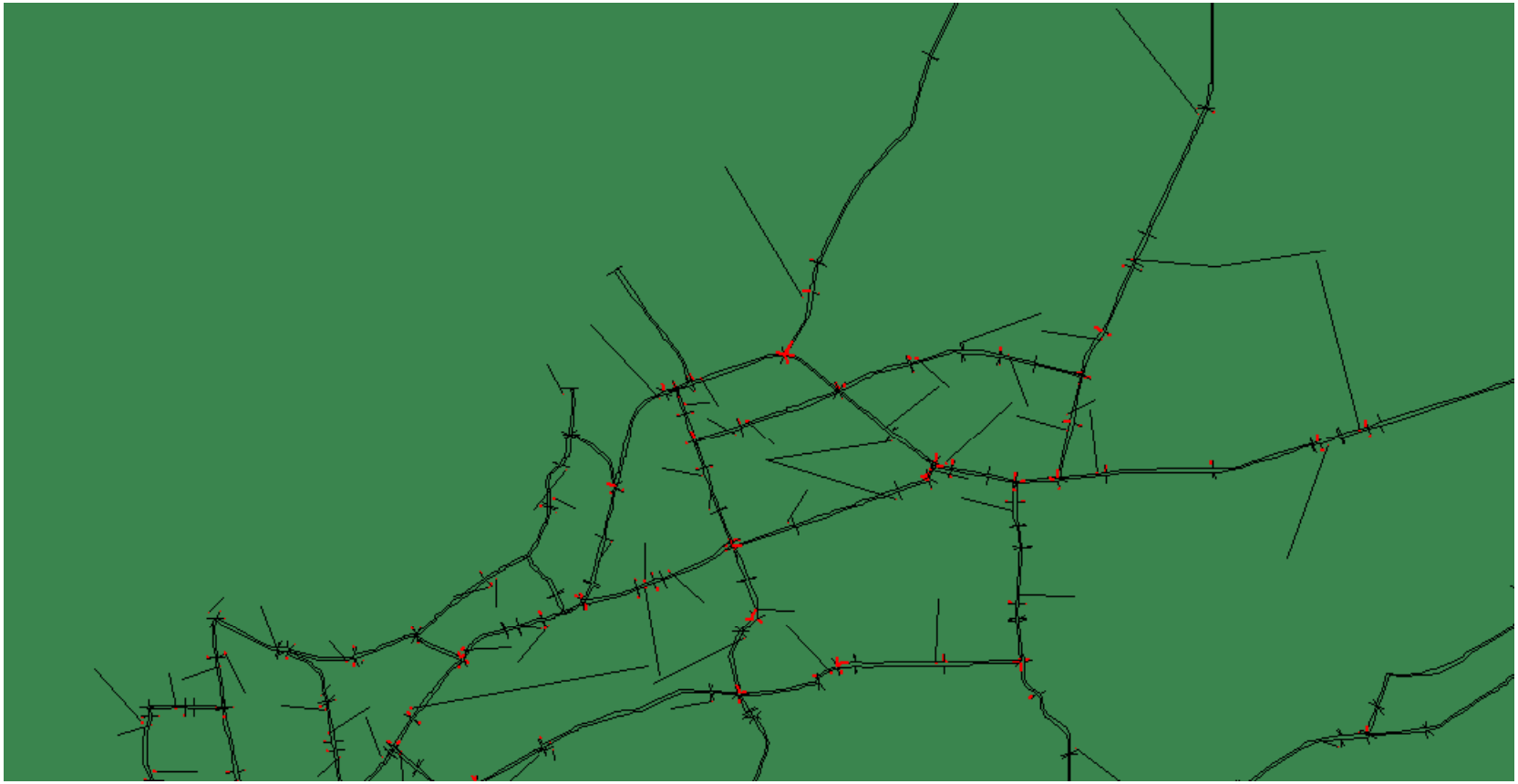


Consulting Group, Inc.

What Does it Look Like?

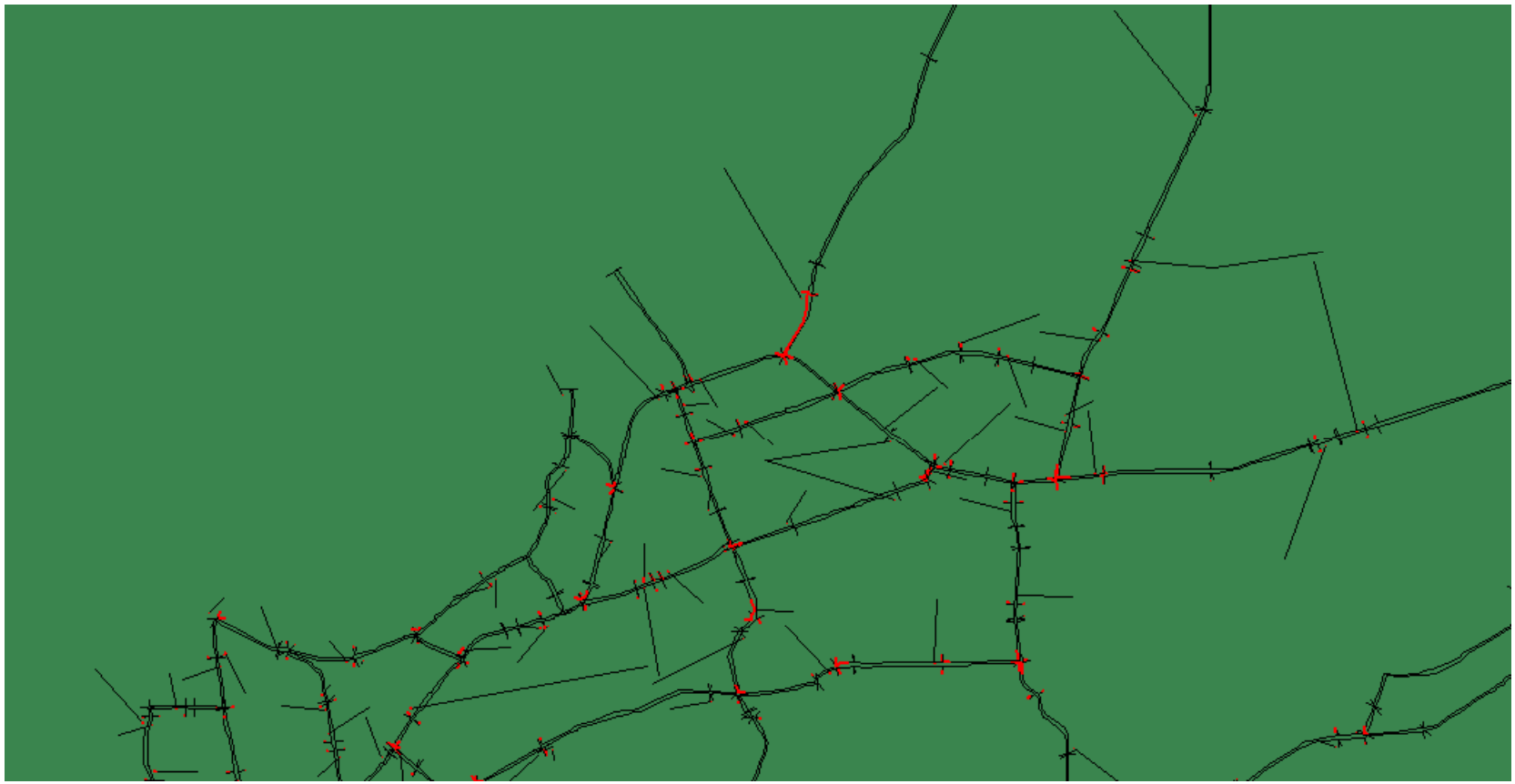
Consulting Group, Inc.

Start +5 Minutes



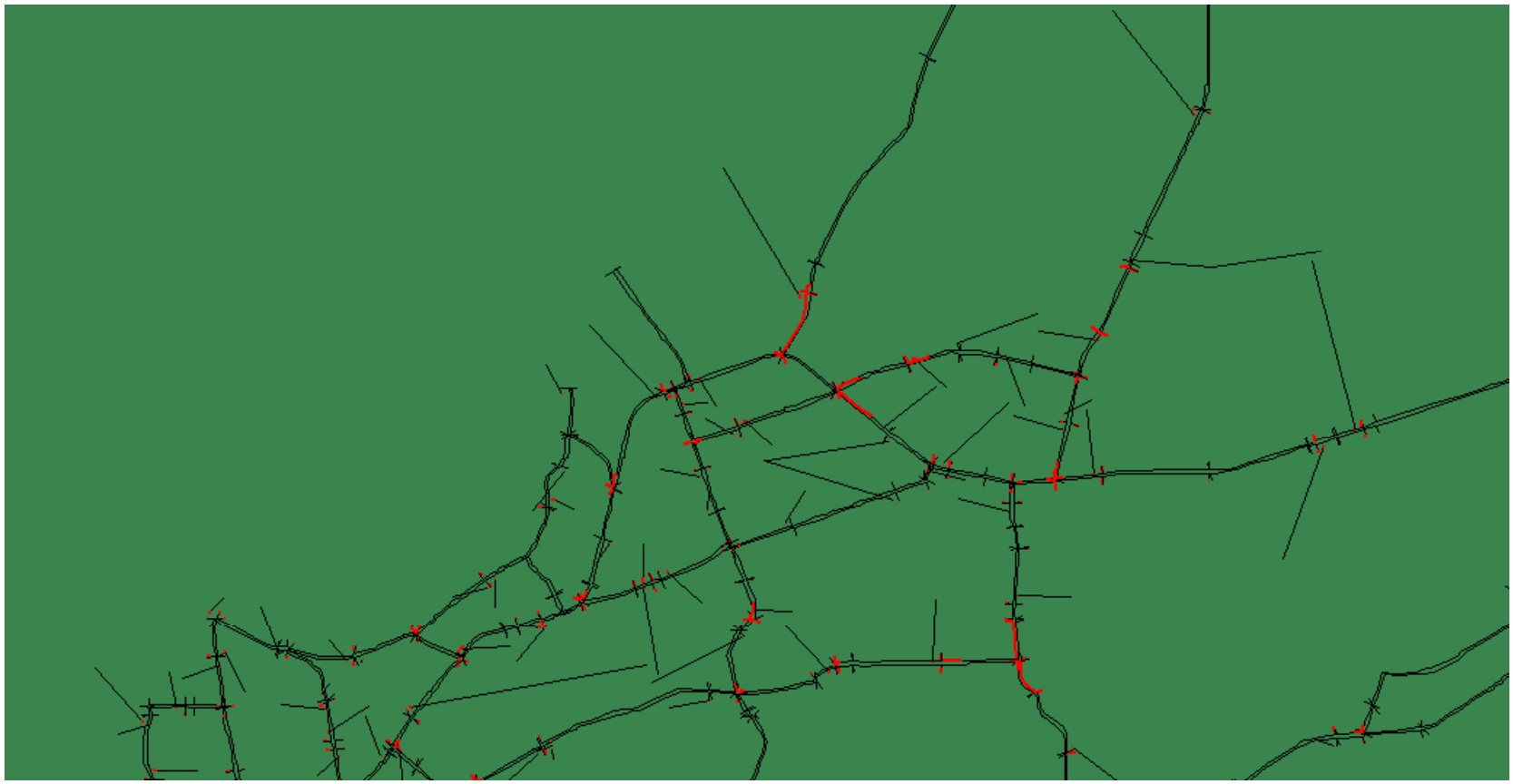
Consulting Group, Inc.

Start +45 Minutes



Consulting Group, Inc.

Start +1 Hour



Consulting Group, Inc.

Where Can I Get DTA Software?

- CALIPER (TransCAD, TransModeler)
- CITILABS (Avenue)
- INRO (DYNAMEQ)
- PTV (VISSIM)
- McTRANS (DYNASMART/DYNUS-T)
- VISTA
- Others

SRF Consulting Group, Inc.

Questions?

- Steve Wilson
- swilson@srfconsulting.com
- 763.249.6760

SRF Consulting Group, Inc.