



CAMBRIDGE
SYSTEMATICS

Think  Forward

Aimsun Model Review Training

Day 2: Network Review

Caltrans On-Call Traffic Simulation Training

presented to

Caltrans District 7



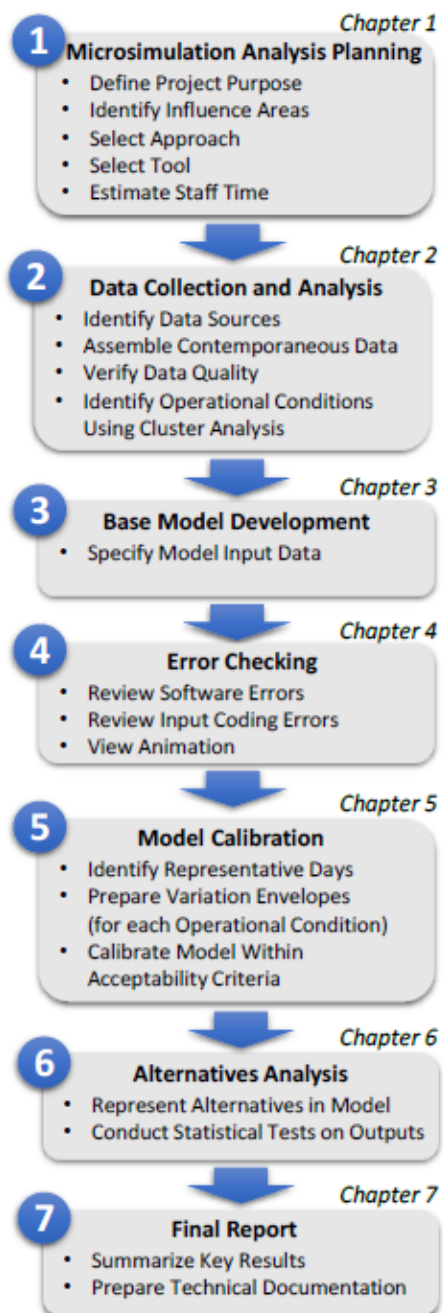
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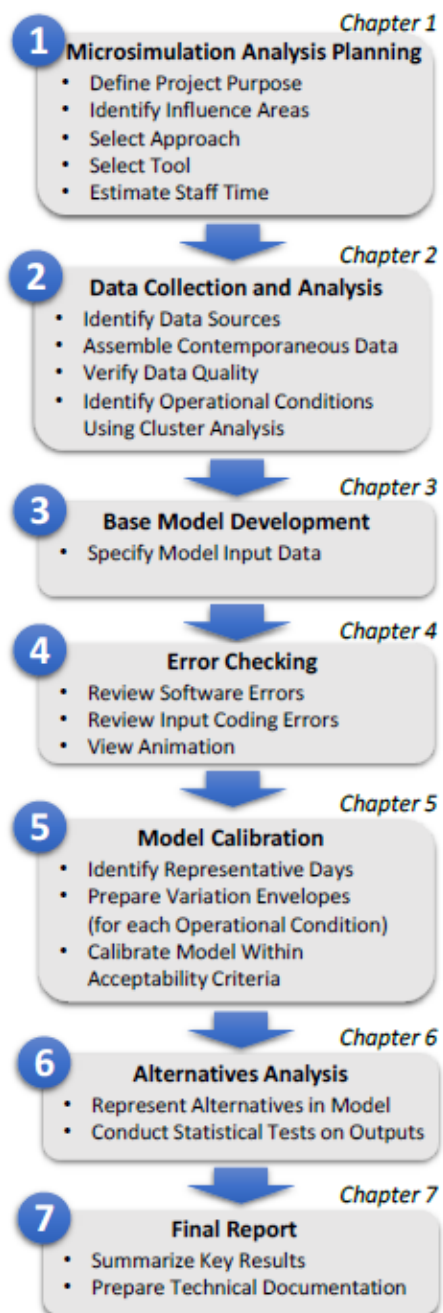
Traffic Analysis Tools: Volume III Microsimulation



➤ Microsimulation Model Development Process (from forthcoming update version)

Figure 1. Diagram. The Microsimulation Analytical Process (Source: FHWA)





➤ Network Review – Part of:

» Step 4: Error Checking

» Step 5: Calibration Details

» Step 6: Alternatives Analysis

Figure 1. Diagram. The Microsimulation Analytical Process (Source: FHWA)

Review of Basic Network Elements

➤ Geometry

» Network connectivity

- Via diagnostic runs

» Section/Turn Settings

- Functional types
- Max speed
- Capacity
- User-defined costs
- Micro-/Meso- driving behaviors
- Attractiveness

Main	Slope	Lanes	Dynamic Models
Name:	Orange Grove		
Road Type:	8: Arterial		
User-Defined Cost:	0.00		
Third User-Defined Cost:	0.00		
External ID:	Orange Grove		
Maximum Speed:	40.00 mph		
Second User-Defined Cost:	1.00		
Capacity:	1800.00 PCUs/h		

Review of Basic Network Elements

➤ Geometry

» Section/Turn Settings

- Micro- driving behaviors
 - Cooperation
 - Aggressiveness
 - Braking intensity
- Meso- driving behaviors
 - Jam density
 - Reaction time factor

» Turn/U-turn prohibitions

Micro

Lane Changing

Cooperation: 50.00 %

Aggressiveness: 0.00 %

Braking Intensity: Normal

Imprudent Lane Changing

Queue Discharge

Acceleration Factor: No Change

Additional Reaction Time at Stop: 0.00 sec

Additional Reaction Time at Traffic Light: 0.00 sec

Meso

Jam Density (per Lane): 193.10 veh/mi

Lane Selection Model

Penalise Shared Lanes

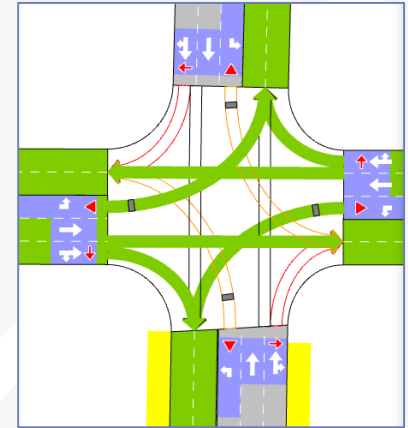
Reaction Time Factor: 1.00

Take into Account Fast/Slow Lanes

Review of Basic Network Elements

➤ Signal Controls

- » Physical movements coded for each phase
- » Phases correspond to correct turn movements
- » Detectors correspond to correct phases
- » Actuated settings and detectors
 - Recall
 - Min green
 - Max-out
 - Passage time
 - Gap reduction



Basics	Actuated	Detectors
Recall: No		
Minimum Green: 10.00 sec	Max-Out: 55.00 sec	Passage Time: 4.80 sec
Permissive Period From: 0.00 sec	Permissive Period To: 50.00 sec	Force-Off: 60.00 sec
<input checked="" type="checkbox"/> Variable Initial		<input type="checkbox"/> Hold
Maximum Initial Green: 15.00 sec	Seconds per Actuation: 2.50 sec	
<input checked="" type="checkbox"/> Gap Reduction		
Minimum Gap: 3.00 sec	Time Before Reduce: 1.70 sec	Time to Reduce: 30.00 sec

Review of Basic Network Elements

➤ Signal Controls

» Timing parameters

- Cycle length
- Offset
- Green time, amber time, all red time

» Master control plan review

➤ Stop/Yield Controls

Review of Basic Network Elements

OD Demands

» Centroid / Centroid Connectors

- Loading points check
- Review locations with significant virtue queues

» Review OD preparation and adjustment process

- How were the OD matrices developed?
- How were the demand profiles developed?
- ODME used?

» Traffic Demands

- OD Matrices
- Vehicle Types
- Scaling Factors

Review of Basic Network Elements

➤ ITS Elements

- » Ramp metering settings
- » DMS
- » Detectors

➤ Traffic Management Strategies

- » Activation conditions
 - Time period
 - Trigger
- » Scenario settings

➤ Transit

Check and Fix Experiment

- ➔ Built in tool to help check various network elements

The screenshot shows a software interface with a tree view on the left and a context menu on the right. The tree view is organized into two main sections: 'SCENARIOS' and 'SCRIPTS'. Under 'SCENARIOS', there is a sub-section 'Dynamic Scenario 249' which contains 'Experiment 250' (highlighted with a blue selection bar) and 'Replication 252' (with a small 'SRC' icon). Under 'SCRIPTS', there are several items with a blue icon: 'Average Calculator', 'Calculate Node Flows', 'Change Experiment', 'Change Traffic Demand', and 'Change Turning Function'. The context menu is open over 'Experiment 250' and contains the following items: 'New...' (with a right-pointing arrow), 'Check and Fix Experiment' (highlighted with a blue selection bar), 'Rename' (with 'F2' to its right), 'Delete', and 'Properties'.

Check and Fix

➔ Returns:



Errors



Warnings



Fix

➔ Codes:

» See Help for details

Check and Fix Messages

Results

Object Type: All Object Id: All Error Type: All

	Code	Object Type	Object Id	Message
✘	20000	Pedestrian Type	594	Pedestrian Type 594 Legion Entity Profile not defined.
✘	19000	Pedestrian Obstacle	537	Pedestrian object 537 is partially outside of its pedestrian area 505 .
✘	19000	Pedestrian Obstacle	558	Pedestrian object 558 is partially outside of its pedestrian area 505 .
✘	19000	Pedestrian Polygon Obstacle	571	Pedestrian object 571 is partially outside of its pedestrian area 505 .
✘	19000	Pedestrian Polygon Obstacle	574	Pedestrian object 574 is partially outside of its pedestrian area 505 .
ⓘ	19002	Pedestrian Polygon Obstacle	1707	Pedestrian obstacle 1707 in pedestrian area 505 have been simplified.
✘	19003	Level Change Object	1479	Pedestrian obstacle 1479 is overlapped with pedestrian object 538 in pedestrian
✘	19003	Level Change Object	1479	Pedestrian obstacle 1479 is overlapped with pedestrian object 540 in pedestrian
✘	19003	Level Change Object	1479	Pedestrian obstacle 1479 is overlapped with pedestrian object 573 in pedestrian
✘	19003	Level Change Object	1479	Pedestrian obstacle 1479 is overlapped with pedestrian object 542 in pedestrian
✘	19003	Level Change Object	1479	Pedestrian obstacle 1479 is overlapped with pedestrian object 539 in pedestrian
✘	19003	Level Change Object	1479	Pedestrian obstacle 1479 is overlapped with pedestrian object 575 in pedestrian
⚠	1011	Section	489	Vehicles may not have sufficient time to anticipate the off-ramp in seccion 489 .
⚠	1018	Section	1704	Floating section 1704 .
✘	1023	Section	1704	Section 1704 has a negative user-defined cost.
⚠	7005	Turn	132	Turn 132 in node 130 have a potentially low automatically calculated speed value
⚠	7005	Turn	137	Turn 137 in node 135 have a potentially low automatically calculated speed value
⚠	7005	Turn	148	Turn 148 in node 146 have a potentially low automatically calculated speed value
⚠	7005	Turn	152	Turn 152 in node 150 have a potentially low automatically calculated speed value
⚠	7005	Turn	160	Turn 160 in node 159 have a potentially low automatically calculated speed value
⚠	7005	Turn	162	Turn 162 in node 159 have a potentially low automatically calculated speed value
⚠	7005	Turn	165	Turn 165 in node 164 have a potentially low automatically calculated speed value
⚠	7005	Turn	169	Turn 169 in node 167 have a potentially low automatically calculated speed value
⚠	7005	Turn	173	Turn 173 in node 171 have a potentially low automatically calculated speed value

Errors: 12 Fixed: 1 Warnings: 18

Help Check



Check Exercise

- Tutorial: Traffic Management
 - » Initial Model
 - » Check and Fix 'Micro Exp Match – No Strategy'

Further Review Methods

- View Modes
- Table View