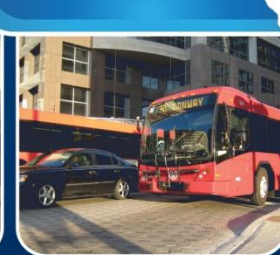
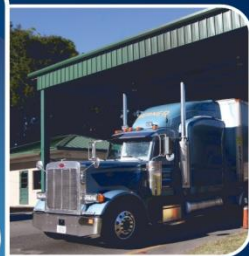
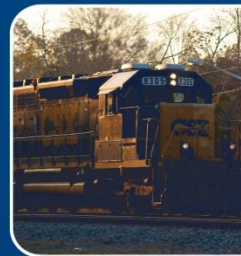


Framework for Multi-Resolution Analyses of Advanced Traffic Management Strategies

presented by

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Needs for MRM



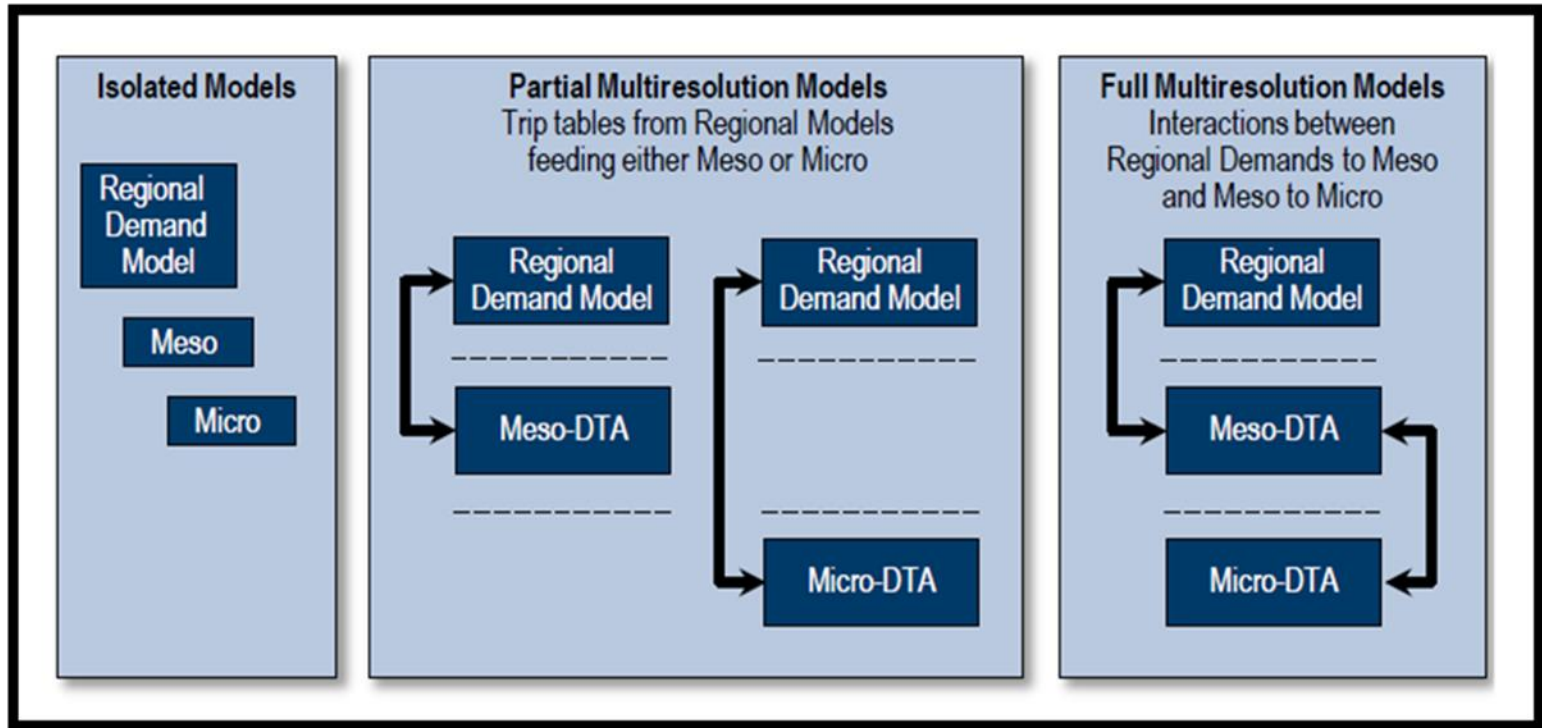
- Combinations of advanced modeling tools are needed for advanced strategies
 - Congested conditions
 - Managed lanes (ML) and congestion pricing
 - Construction, event, and incident impacts
 - ATDM, smart work zones, incident management, and integrated corridor management
 - Automated and connected vehicles
- Tools and methods are becoming available, however integration of tools is needed for effective modeling

MRM Tools



- Regional demand forecasting models
- Sketch planning tools
- Other macroscopic models (with and without DTA)
- Mesoscopic simulation-based DTA
- Microscopic simulation (with and without DTA)
- Data-based analytics
- Modeling preprocessing and post-processing support tools

Multi-Resolution Simulation



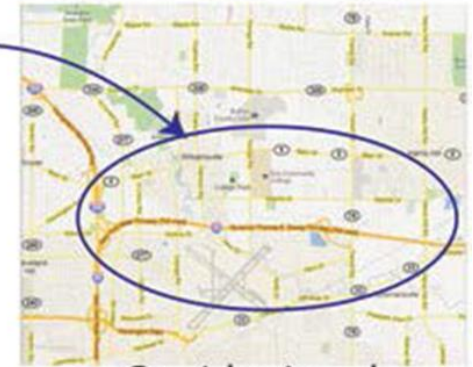
Modeling Levels



Regional Scale



Sub-Regional Scale



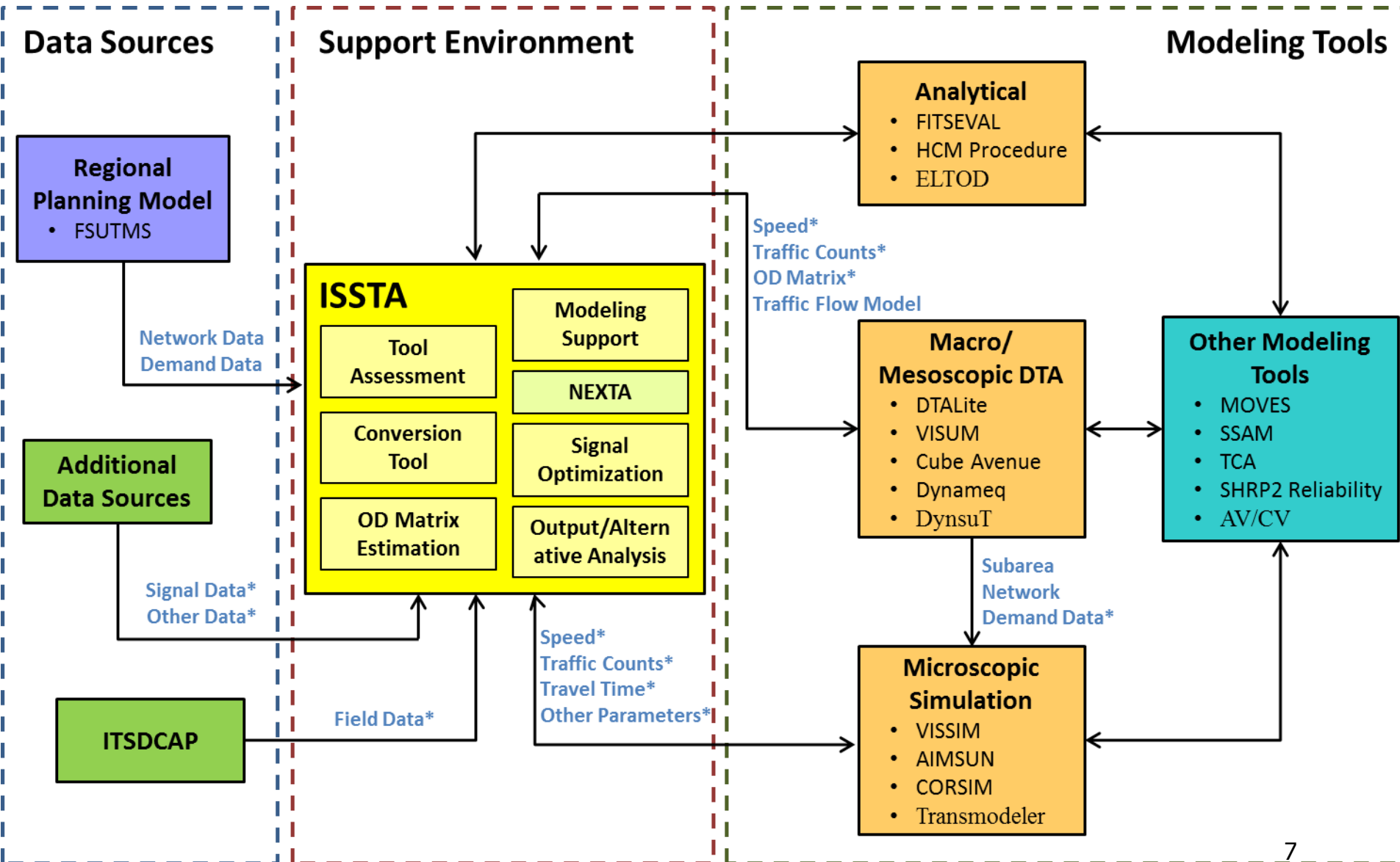
Corridor Level

Multi-Resolution Framework



- Partial multi-resolution with connection from demand models to micro-simulation has been used
- However, there has been increasing interest in full multi-resolution analysis
- Microscopic modeling may or may not be needed depending on the level of the analysis
- Accommodates different tools
 - Off-the-shelf tools and components selected base on user requirements
- Agency developed tools and utilities (e.g., ELTOD and FITSEVAL)
- Model developed for one purpose can be used for different purposes

Potential Framework



*: The data files are interfaced through the csv format.