Development of a Localized Traffic Simulator

Smarter traffic management with evidence-based decision support system

The Problem

Solving the traffic congestion puzzle

Congested

Perennial, inconvenient, costly traffic jam

Ineffective

Need for robust traffic management solutions

Heuristic

LGUs resort to trial-and-error implementation

Unequipped

LGUs lack the capability to evaluate traffic schemes
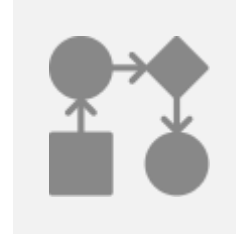
Local Traffic Simulator

LocalSIM is a microscopic traffic simulation software designed to be used by road and traffic engineers of LGUs as a decision support system for traffic management

Traffic Analysis Tool

Effective

○ Enable traffic managers of LGUs to have evidence-based traffic analysis and evaluation of alternative schemes
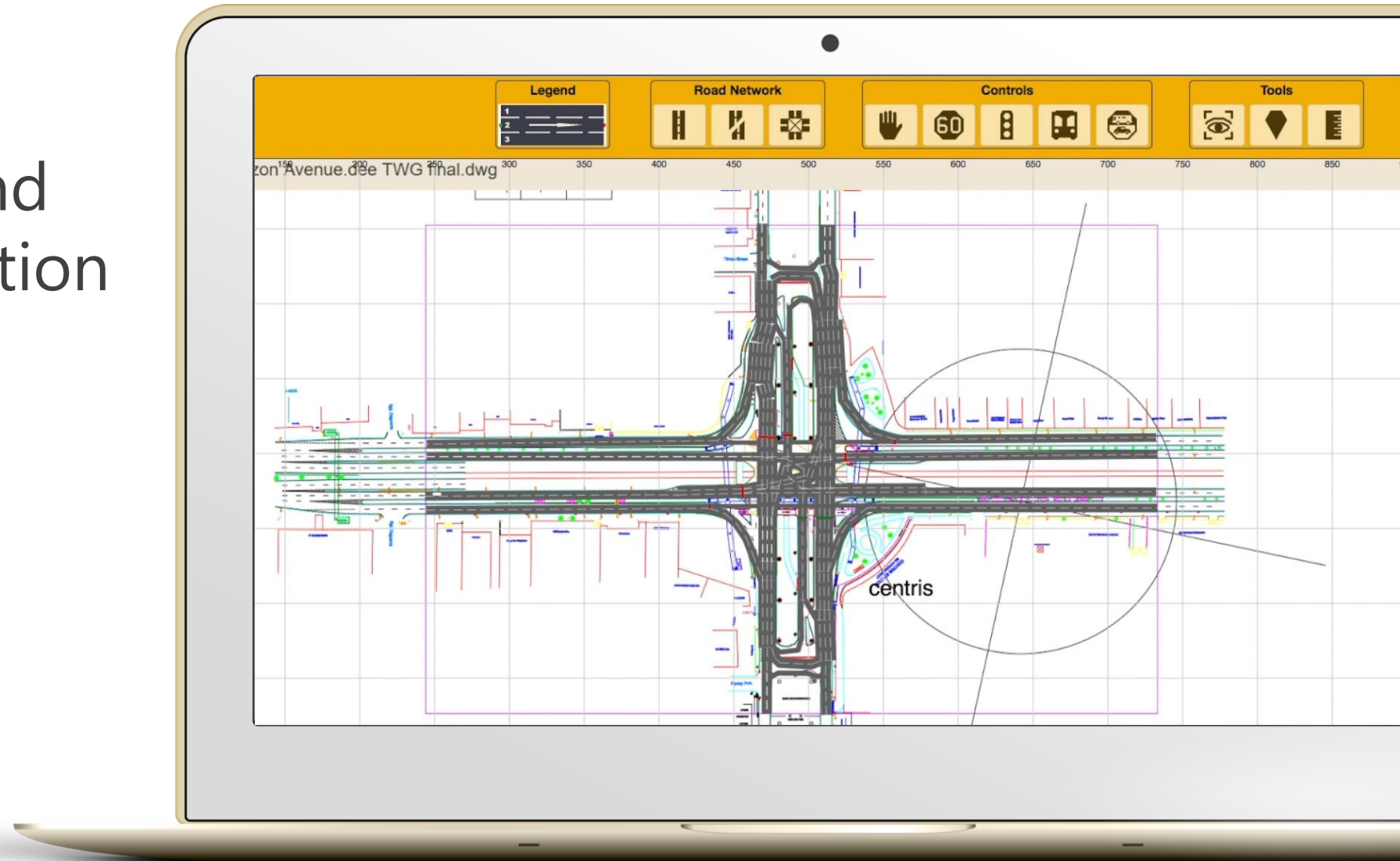
Efficient

○ Minimize the need for trial-and-error implementation of traffic management schemes
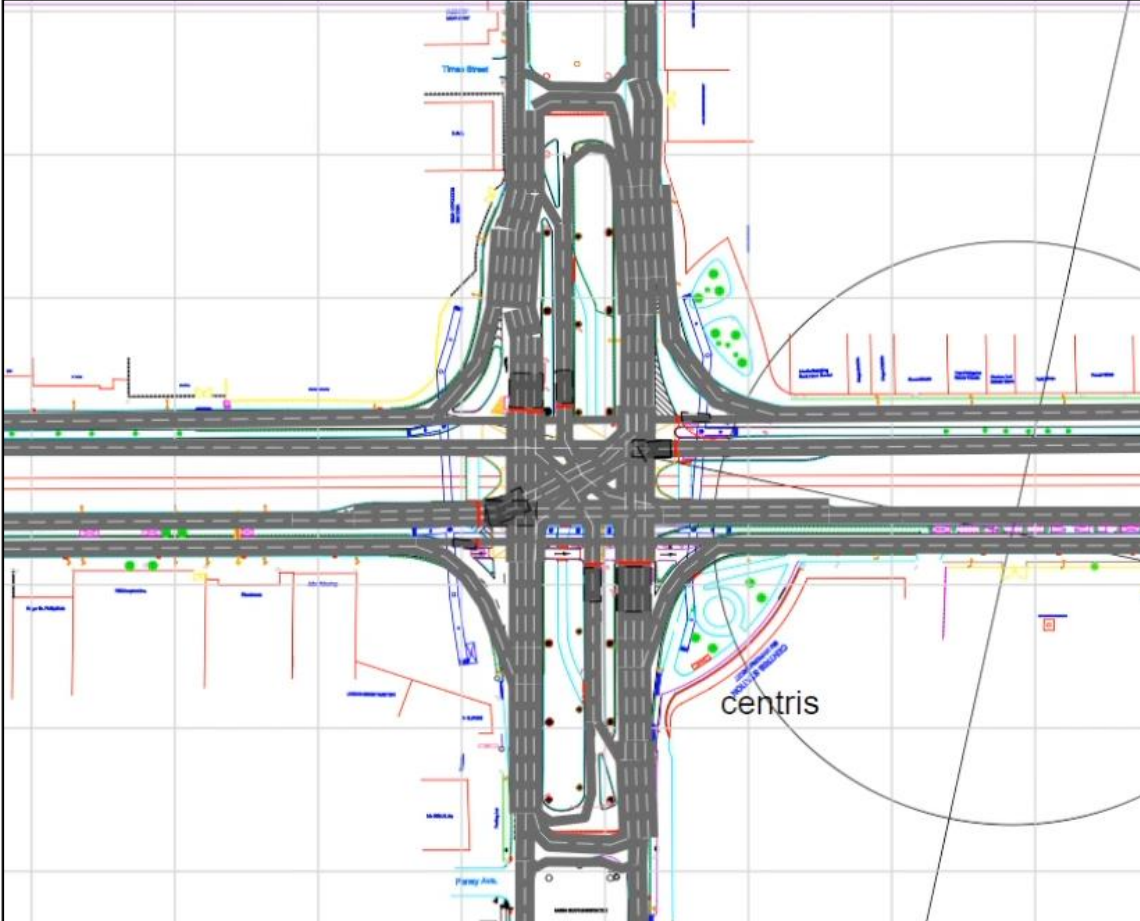
LocalSIM

Driver behavior and movement simulation with animation

Features:

- Conflict Area Management
- Traffic Control Systems
- Dynamic Traffic Demand
- Dynamic Traffic Routing
- Spatial Measures of Performance

Scenario Analysis

The fast software simulation is utilized to compare multiple alternative schemes

Base Case

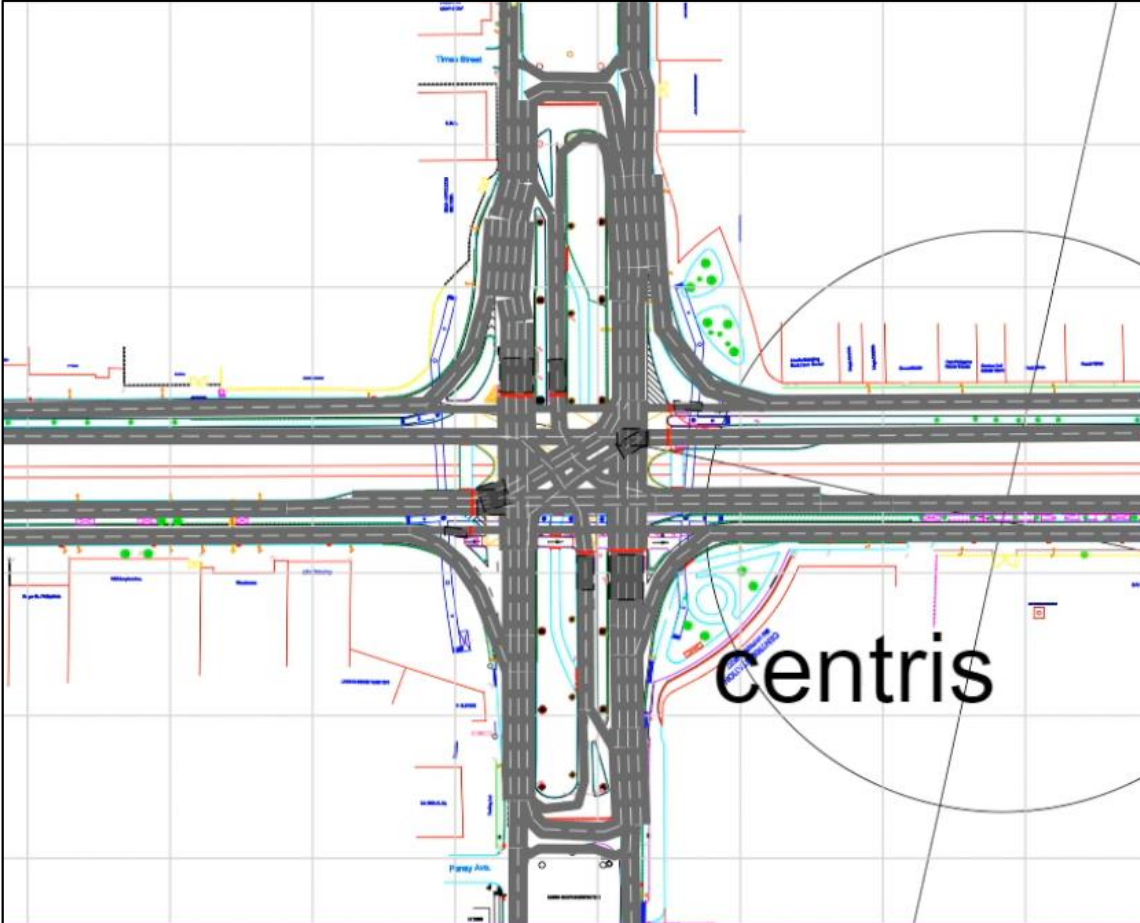Actual scenario is replicated in the system for comparison

Alternative #1

Phase pattern is modified from split-phasing to concurrent

Alternative #2

Cycle time is reduced to minimize intersection stop delay

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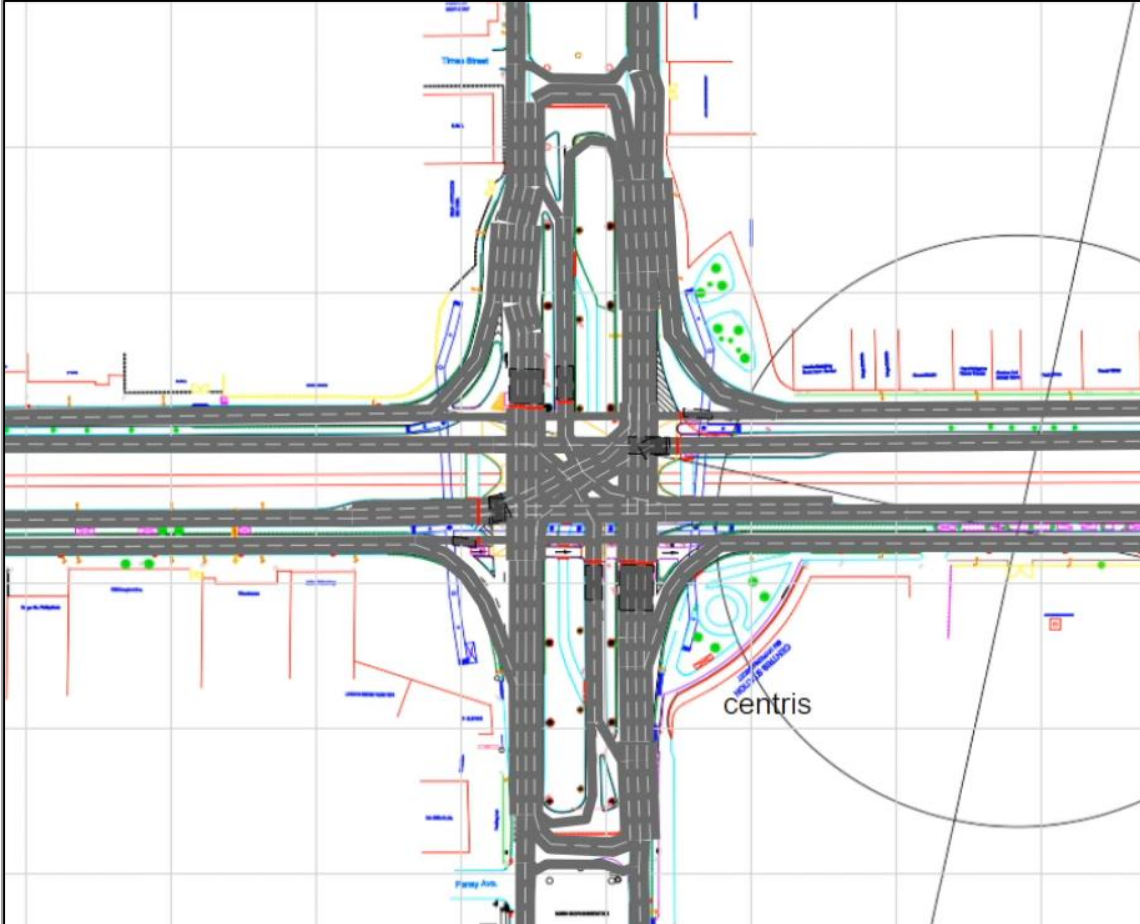Actual scenario is replicated in the system for comparison

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Benchmarking with MMDA Case Study

Measure of Performance	Base Case	New Phase Pattern	Shorter Cycle Time	
Network Travel Time	2 min 32 sec	2 min 36 sec	2 min 21 sec	7%
Average Delay	1 min 26 sec	1 min 26 sec	1 min 7 sec	23%

- ○ Reducing the traffic signal cycle time from 240 seconds to 180 seconds will improve the average travel time of all vehicle movements by 7% and **reduce the average delay by 23%**

Traffic Management Schemes

- Traffic Management Schemes

- Truck ban

- Exclusive truck lane

- Exclusive motorcycle lane

- Lane or road closures

- One-way

- Speed restrictions

- Geometric improvements

- U-turn scheme

Traffic Management Schemes

- Number-coding (UVVRP)

- Bus stop segregation

- Bus loading area

- Traffic signal control

- Turning restrictions

- Grade separation

- Stop/yield control

- Driving behavior of Filipino road users

- Practical and visual traffic flow analysis of road network

- Scenario analysis of traffic management schemes

- Output assessment metrics
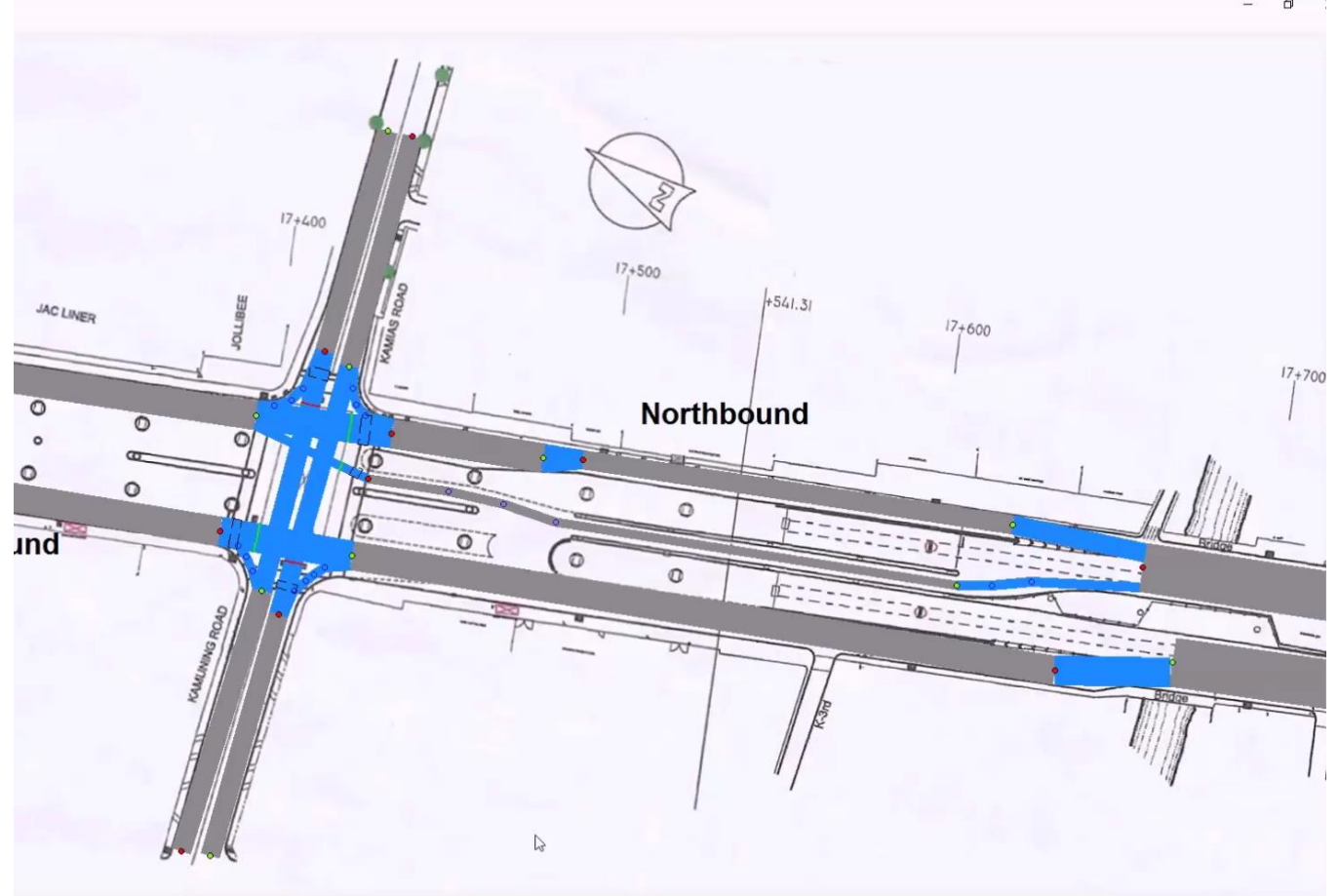
- Inexpensive

LocalSIM

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LocalSIM

Smarter way of managing traffic!

ITS Lab is a **multidisciplinary** group under the University of the Philippines National Center for Transportation Studies that aims to **unify academic efforts** in the field of intelligent transport.

The group currently focuses research and development in the following:

- **Traffic Management System**

- **Traveler Information System**

- **Vehicle Control System**

Hilario Sean O. Palmiano, DEng

Laboratory Head

About ITS Lab

Intelligent Transportation Systems Laboratory

Past and Ongoing Projects

Development of a Localized Traffic Simulator (LocalSIM)
Project Leader: Hilario Sean O. Palmiano, DEng

Cyber-Physical Transportation System (CPTS)
Project Leader: Adrian Roy L. Valdez, PhD

Maritime Transportation Information System (MARIS)
Project Leader: John Justine S. Villar, PhD

Implementing Agencies

Cooperating Agencies

Cooperating Agencies

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Thank You

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