

Vehicle Traffic Simulator and Intersection Collision Warning System

Traffic flow

- Determines average vehicle occupancy
- Impacts vehicle density
- Influences wireless medium utilization

Scenario

- Traffic signal vs. No traffic signal

Wireless repeater

- Rebroadcast received packets (once)

Number of vehicles

- Dictates simulation length

Speed limit

- Dictates maximum velocity
- Impacts average velocity

Buildings

- Specifies building location in intersection
- Buildings impact physical channel

Simulation speed

- 2 values for user visualization
- 1 value for traffic data file generation

Packet transmission behavior

- Distance based
- Initial transmission distance
- Transmission interval
- Number of retransmissions [DOLPHIN]

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Simulation time

Wireless repeater

Building location

Truck

Receiver

Motorcycle

Transmitter

Intersection Type

- Traffic signal
- North – South
- Stop sign

Collision warning

Motorcycle

Bus

Car

Receiver

Last message

Wireless Simulator

Time	Source (ID)	Receiver (ID)
25.451	35	37

Critical messages

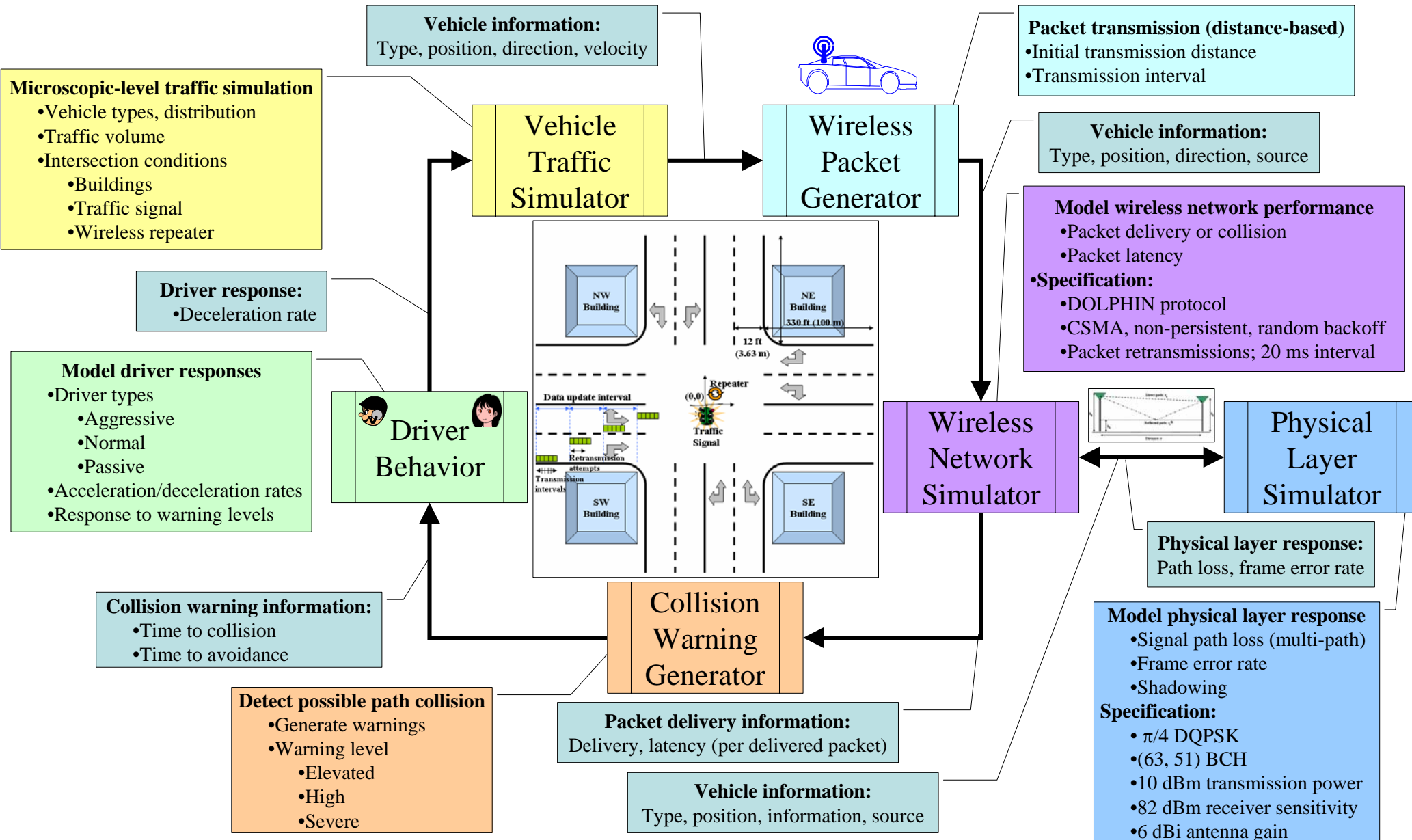
Warning Message

Time	Source (ID)	Receiver (ID)	Level
24.714	30	33	3
24.779	32	31	3
24.910	31	30	1
24.877	31	32	3
25.241	32	35	3
25.321	33	32	3
25.453	35	32	3

Last collision

Accidents! Vehicle 31 and Vehicle 30!!!

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Performance of Wireless Intersection Collision Warning System

