

# Introduction leads to why this model

Problem Statement

Why this model helps at all?

Questions to be answered

Others for now

Other papers or projects similar



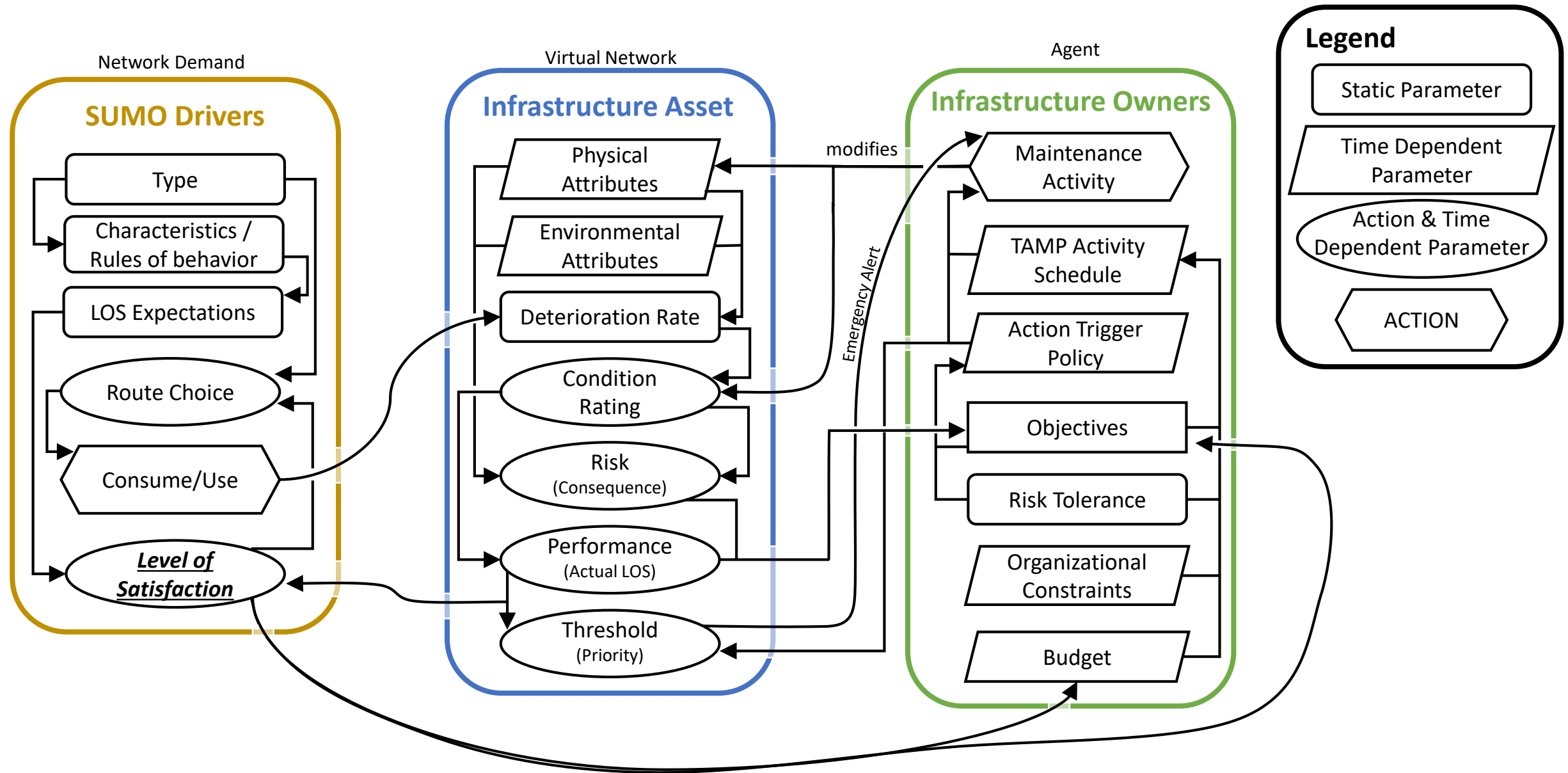






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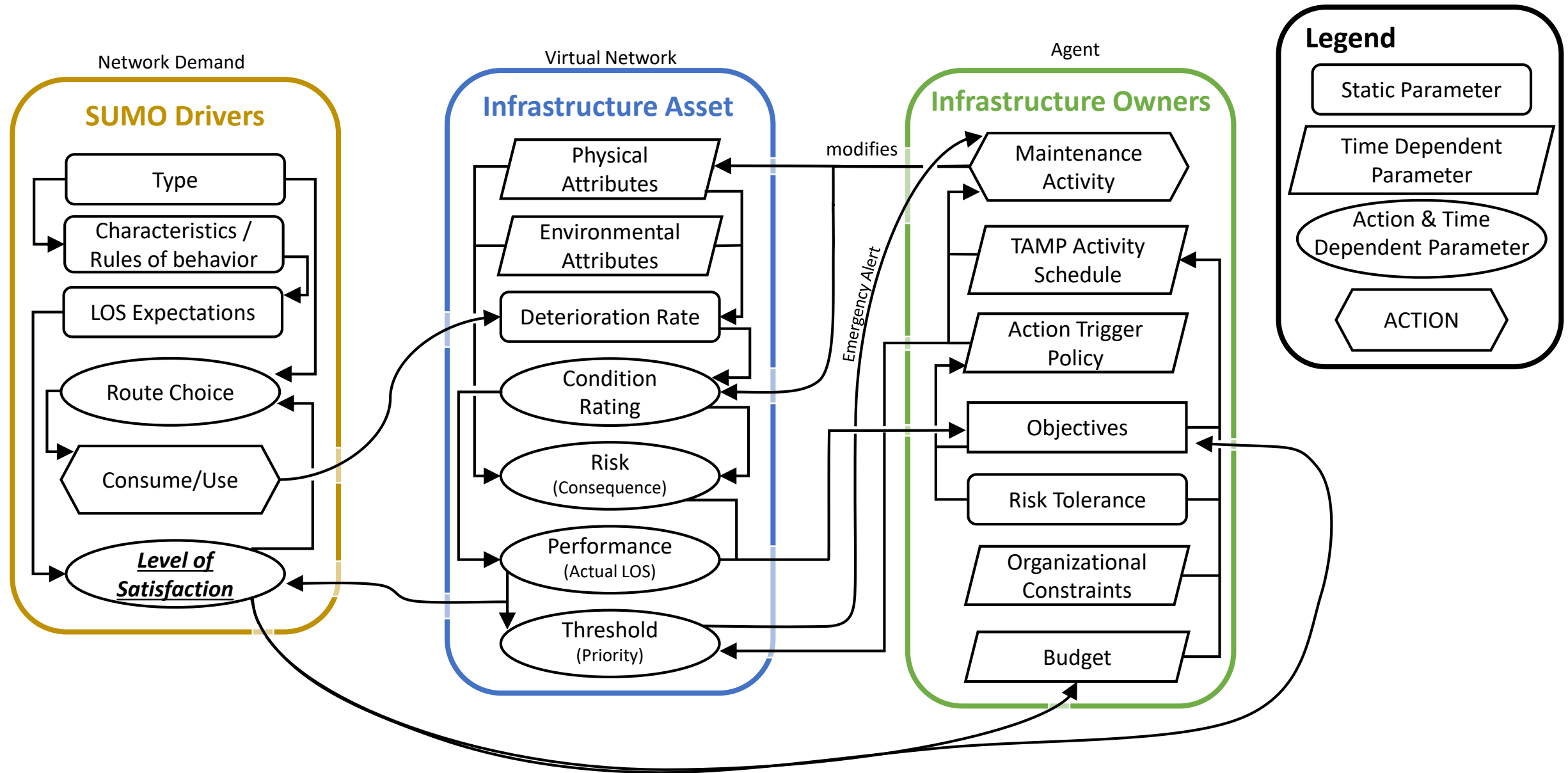
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# Virtual Network

Description of virtual network

Why SUMO





# Components

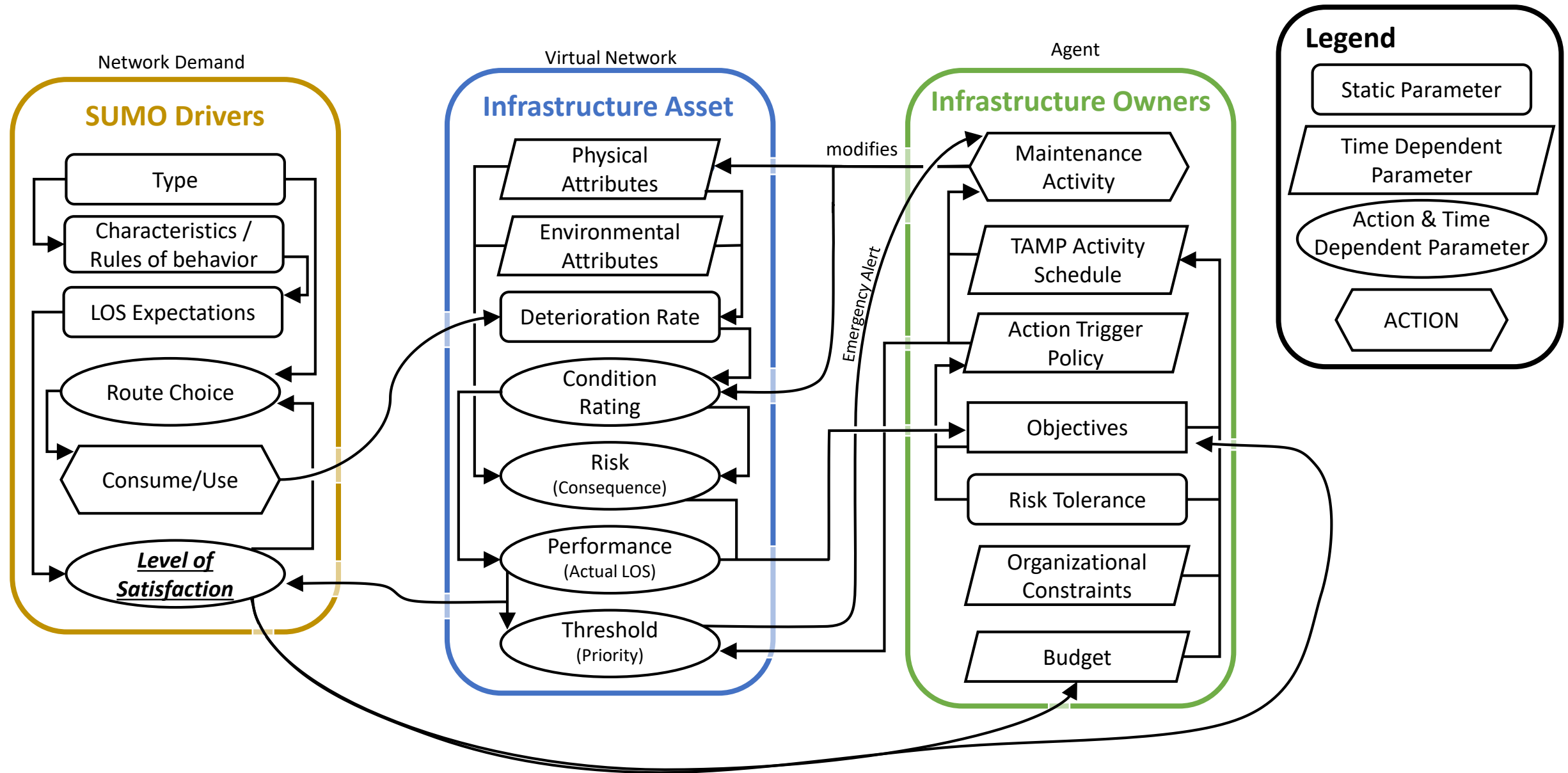


Roadway parameterization

*Names; lane width, max speed; permissions; etc...*

Show *Dataframe*

O agent HQ locations





# Network Demand – Users; Routes; Behavior; Etc...

Description\_of\_Network\_Demand

## Driver Behavior

[SUMO-Wiki - Definition\\_of\\_Vehicles,\\_Vehicle\\_Types,\\_and\\_Routes](#)

[Car-Following Models - Wiki\\_Link](#)

Name	Type	Description	Wiki_LINK
begin	(simulation) seconds	The first time step the values were collected in	
end	(simulation) seconds	The last time step + DELTA_T in which the reported values were collected	
edge@id	(edge) id	The name of the reported edge	
lane@id	(lane) id	The name of the reported lane	
sampledSeconds	s	Number seconds vehicles were measured on the edge/lane (may be subseconds if a vehicle enters/leaves the edge/lane). Please note that this value is the sum of the measure times of all vehicles.	
traveltime	s	Time needed to pass the edge/lane, note that this is just an estimation based on the mean speed, not the exact time the vehicles needed. The value is based on the time needed for the front of the vehicle to pass the edge.	
overlapTraveltime	s	Time needed to pass the edge/lane completely, note that this is just an estimation based on the mean speed, not the exact time the vehicles needed. The value is based on the time any part of the vehicle was the edge.	
density	#veh/km	Vehicle density on the lane/edge	
occupancy	%	Occupancy of the edge/lane in %	
waitingTime	s	The total number of seconds vehicles were considered stopped	
speed	m/s	<p>The mean speed on the edge/lane within the reported interval.</p> <div> <b>Caution:</b>            This is an average over time, rather than an average over the vehicles. Since slow vehicles spend more time on the edge they will have a proportionally bigger influence on average speed.         </div>	
departed	#veh	The number of vehicles that have been emitted onto the edge/lane within the described interval	
arrived	#veh	The number of vehicles that have finished their route on the edge lane	
entered	#veh	The number of vehicles that have entered the edge/lane by moving from upstream	
left	#veh	The number of vehicles that have left the edge/lane by moving downstream	
laneChangedFrom	#veh	The number of vehicles that changed away from this lane	
laneChangedTo	#veh	The number of vehicles that changed to this lane	
vaporized	#veh	The number of vehicles vaporized on this edge ( <b>only present if #veh &gt; 0</b> )	

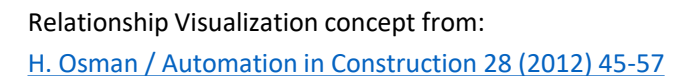




*Specific roadway flow counts*

*Vehicle type distribution*



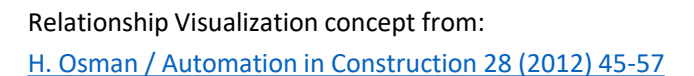


Routes



*Try without and see if we can go for a longer*

Dynamic User Assignment



# Infrastructure Asset Own Agent

Description of Owner Agent Purpose Capabilities



Operation Research Scheduling Decision Module

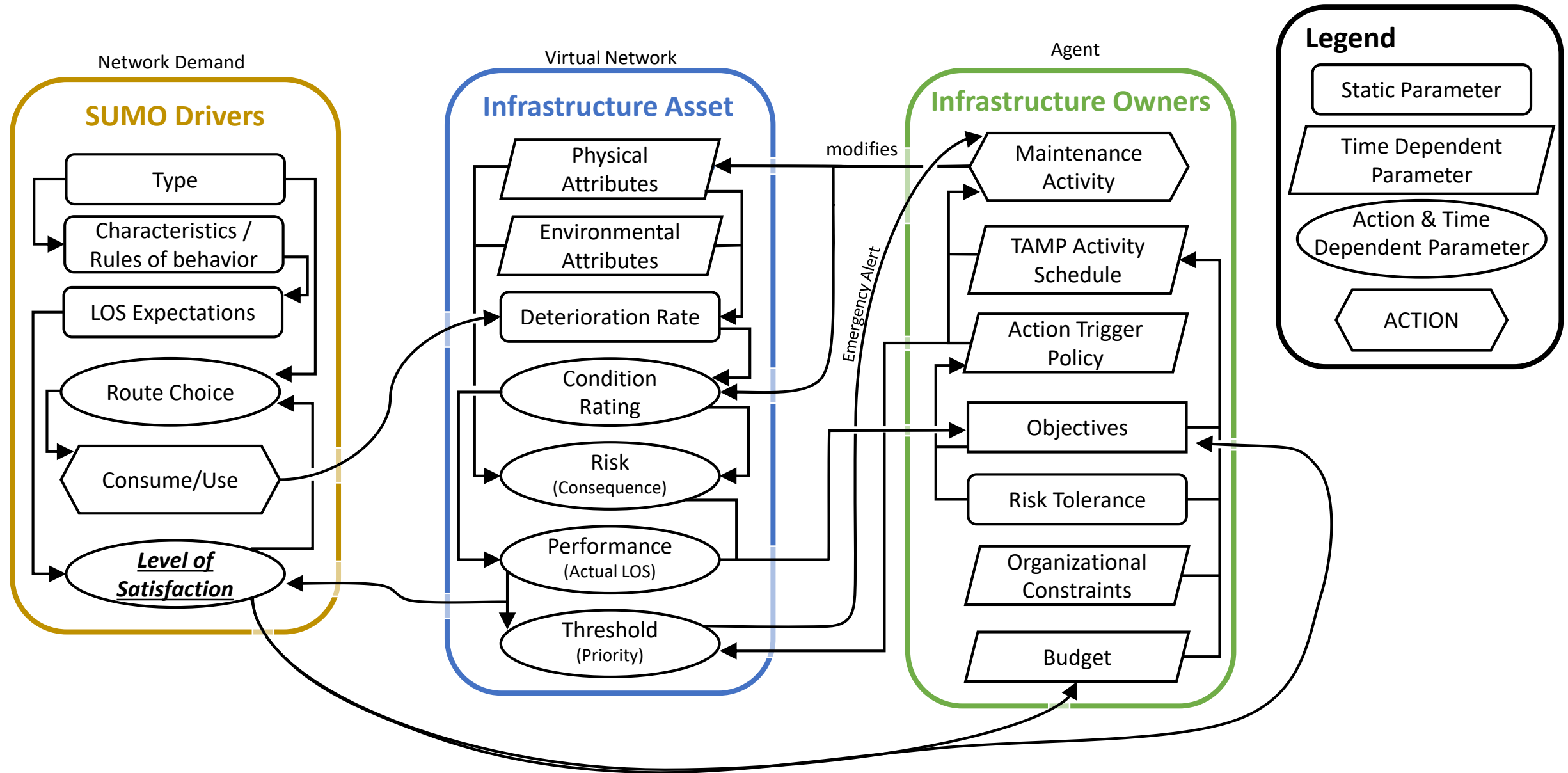
Description of how the schedule will be made inputs outputs

*Scenarios to run*









Virtual Network Modification Module Python Code



Description of how O agent interacts with V network

True to constraints of OR Schedule

*Physical Representation of workforce enforces logic controls*

Work crews like buses with special stops



[Link back to net work parameters](#)

O agent collects simulation network run data for OR module





