

Dynamic E-ADARP : Strategies to improve efficiency of the current insertion heuristic

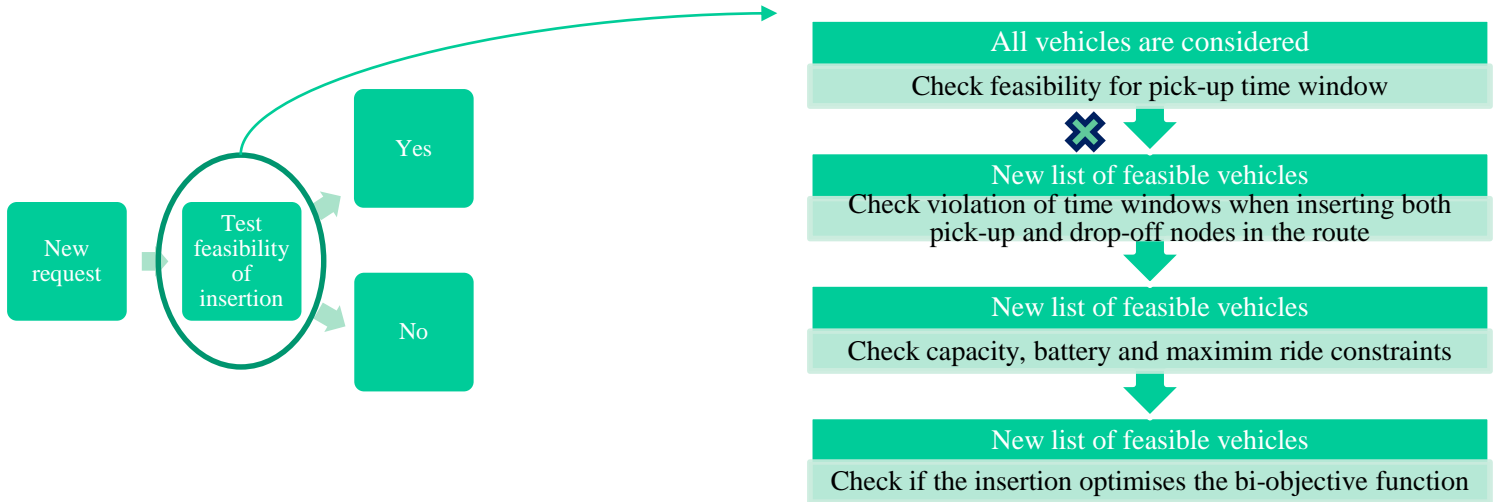
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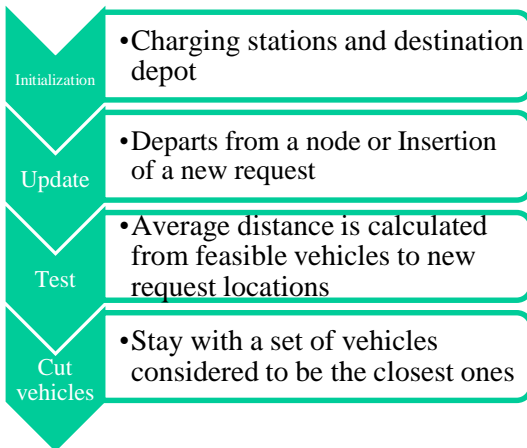
Characteristics of the Dynamic Electric Autonomous Dial-a-Ride Problem

- ✓ Fleet of electric autonomous and capacited vehicles
- ✓ Requests appear in real time
- ✓ Transportation network composed of requests nodes, charging stations and depots

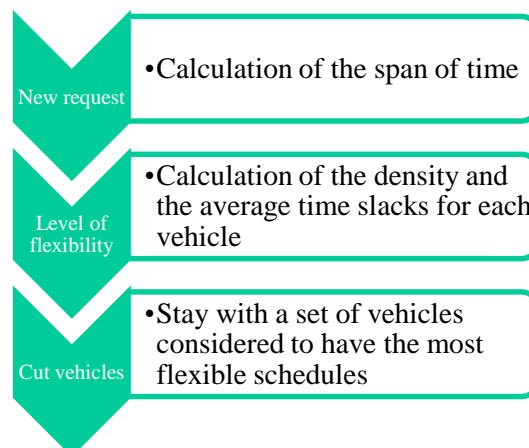


- 3 strategies have been developed and intervene in the insertion process between the first two steps - 
They consist in reducing the size of the set of feasible vehicles according to specific metrics

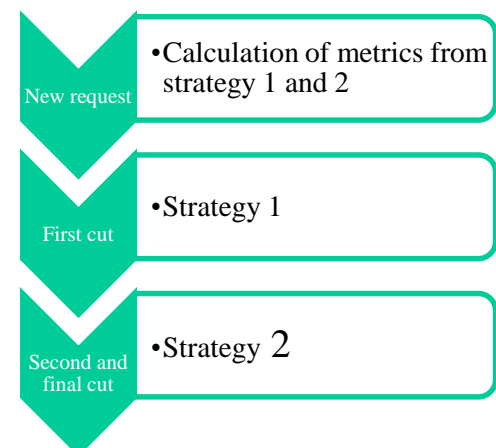
Strategy 1
Barycenter of a vehicle



Strategy 2
Flexibility of schedule
Is defined by the average interval of time that a node can be pushed backward or forward within a portion of vehicle schedule



Strategy 3
Combines strategy 1 and 2 in a two-phases approach



General Results

Strategy	Size Fleet [vehicles]			
	10	20	30	50
1	27.0	21.9	5.6	-2.7
2	-19.2	-23.3	-34.5	-31.6
3	27.0	21.9	-0.7	-9.5

Improvement for the acceptance rate

Strategy	Size Fleet [vehicles]			
	10	20	30	50
1	-87.4	-86.7	-85.8	-84.3
2	-93.4	-93.1	-92.9	-91.8
3	-87.3	-93.4	-91.3	-90.4

Improvement for the CPU time per insertion