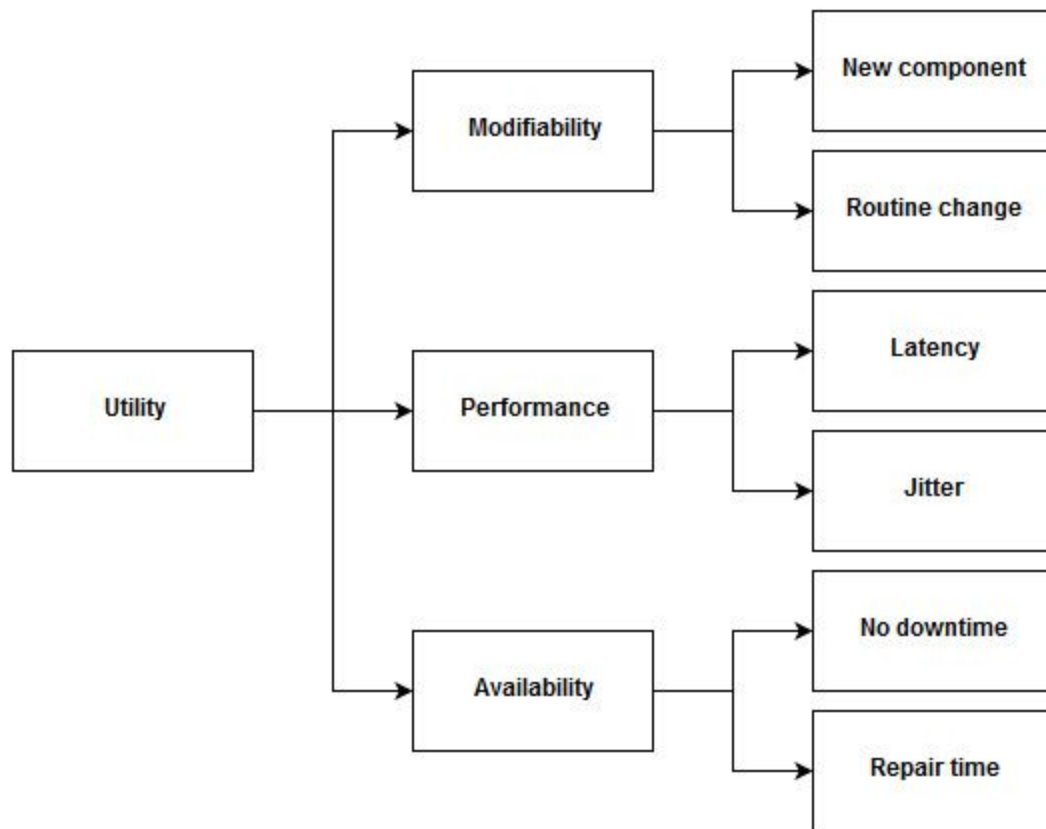


Laboration 3: Software Architecture Evaluation

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Utility tree for the automotive control system



Quality attributes scenarios

Modifiability	
Scenario: New component installation	
Stimulus	New component requested to be added into the system
Environment	Normal operation
Response	Six person months needed for development and installation into the car

Modifiability	
Scenario: New bug found and reported	
Stimulus	Bug in the system reported
Environment	Normal operation
Response	Routine change which requires two person day effort for bug fix and distribution

Performance	
Scenario: Detect and inform the driver about possible collision when parking	
Stimulus	Sporadic event of distance sensor sending information about the obstacle in the close proximity
Environment	Under normal operation - parking
Response	Parking assistance controller initiates the alarm through siren. Latency of approximately 20 ms.influence availability

Performance	
Scenario: Detect and reinitiate packet request if data is jittered in communication channel	
Stimulus	Stochastic event of corrupt package transmitted from distance sensor to ECU
Environment	Under normal operation
Response	Request the same package to be sent. Latency of package being sent is increased for 0.001%.

Availability	
Scenario: Vehicle is turned on	
Stimulus	Vehicle is turned on and operating
Environment	Under normal operation
Response	No downtime. 100% availability

Availability	
Scenario: Primary distance sensor fails and secondary distance sensor is activated¹	
Stimulus	Primary distance sensor fails
Environment	Under normal operation
Response	When primary distance sensor fails, second one is activated where the repair time is around 5 ms.

For this assignment we spent approximately one working day.

¹ We took into account that our vehicle has safety mechanisms installed where one of those would be sensor redundancy.