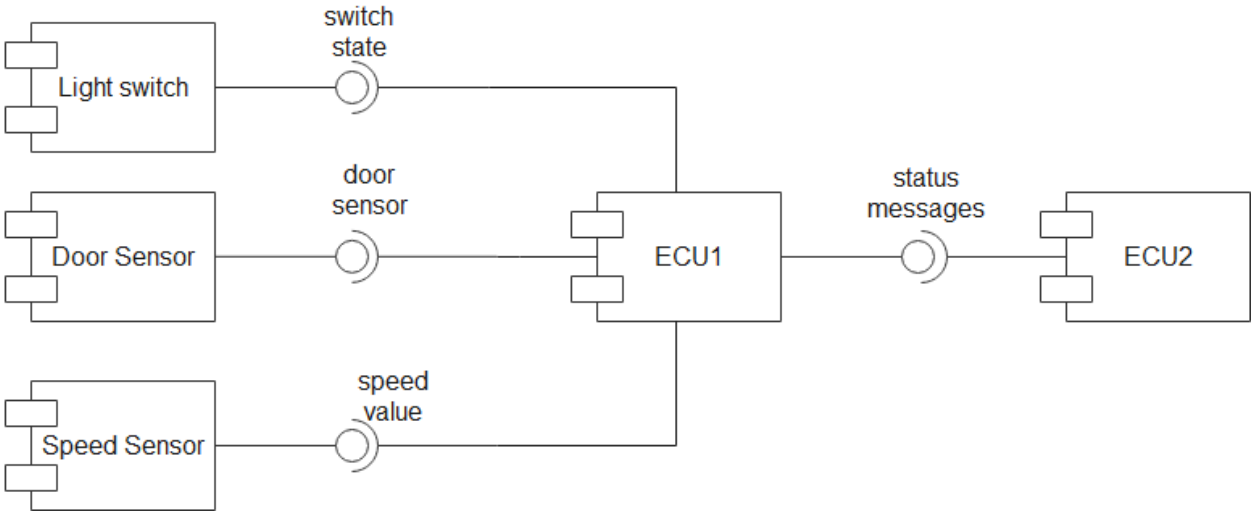
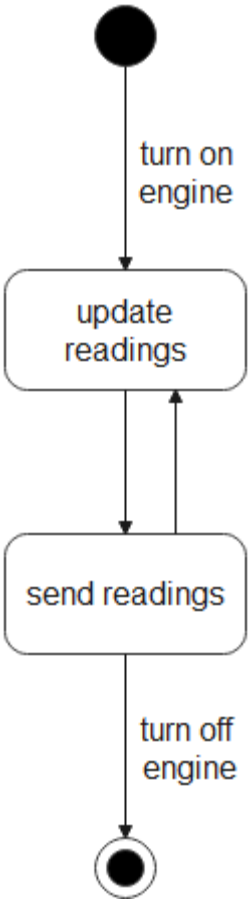
ECU1

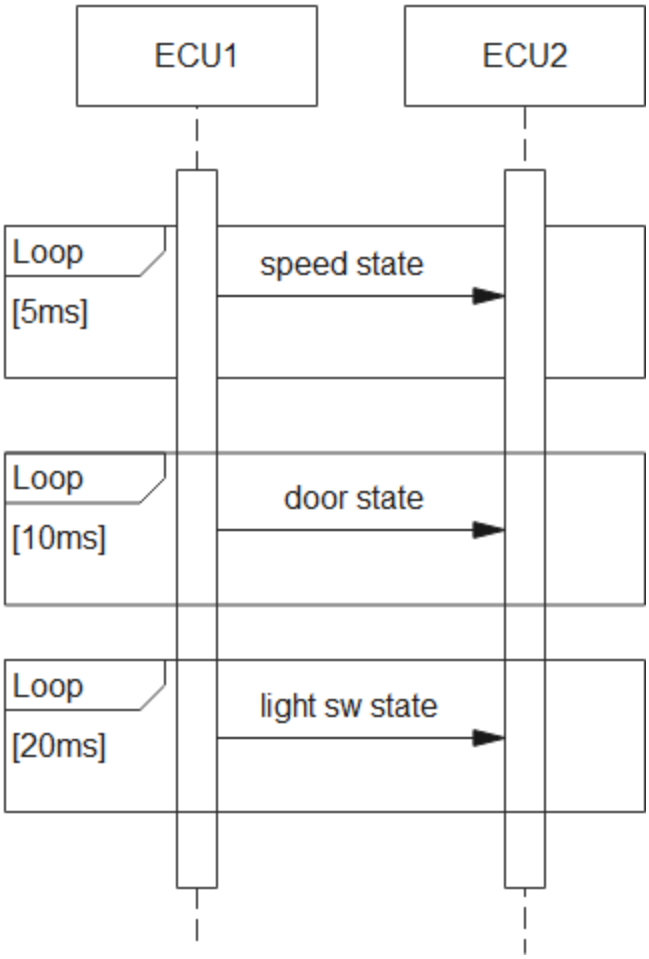
Component diagram



State machine diagram



Sequence diagram



Calculate CPU load for ECU1

We will assume that we have one task that reads three sensors state. Its periodicity is 5ms.

We will assume that the execution time for each task is 1ms

Read task: P: 5, D: 5, E: 1

Send speed state task: P: 5, D: 5, E: 1

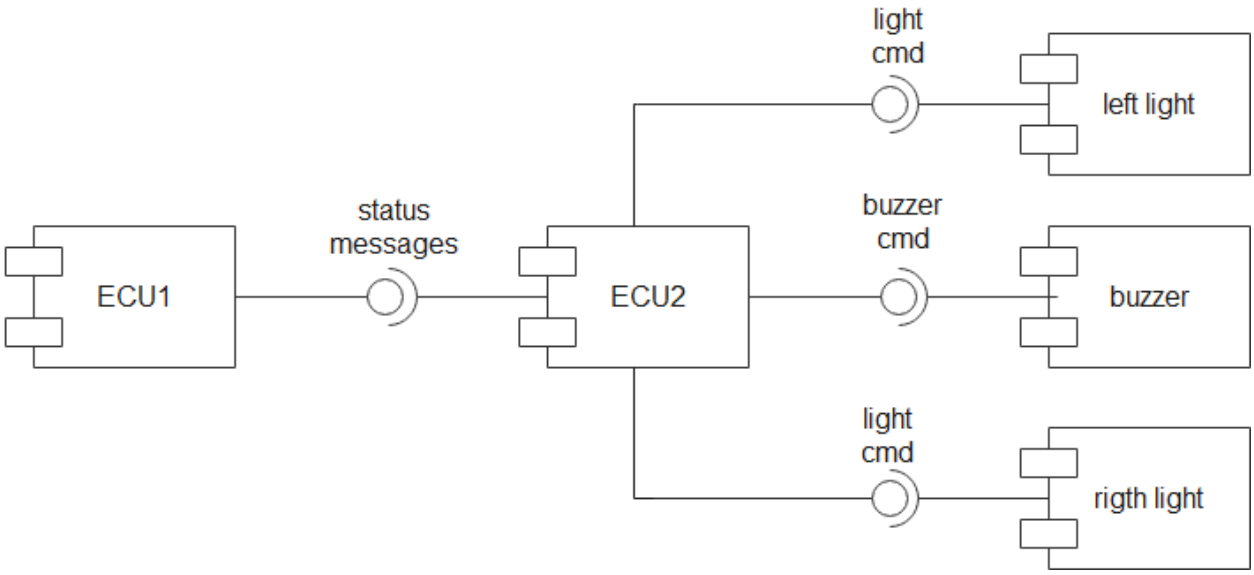
Send door state task: P: 10, D: 10, E: 1

Send Lsw state task: P: 20, D: 20, E: 1

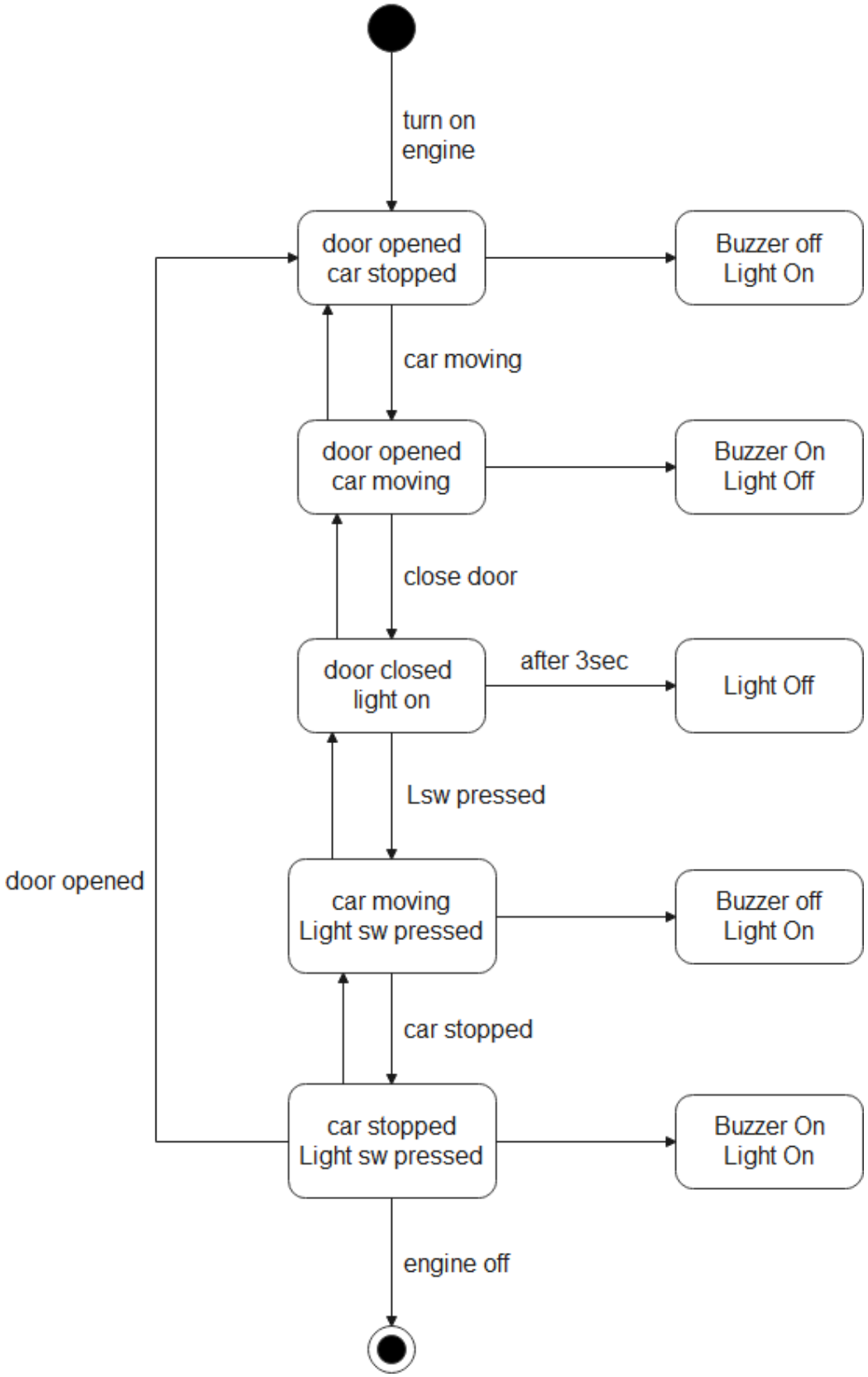
CPU load: 1/5 + 1/5 + 1/10 + 1/20 = 0.55 ➔ 55%

ECU2

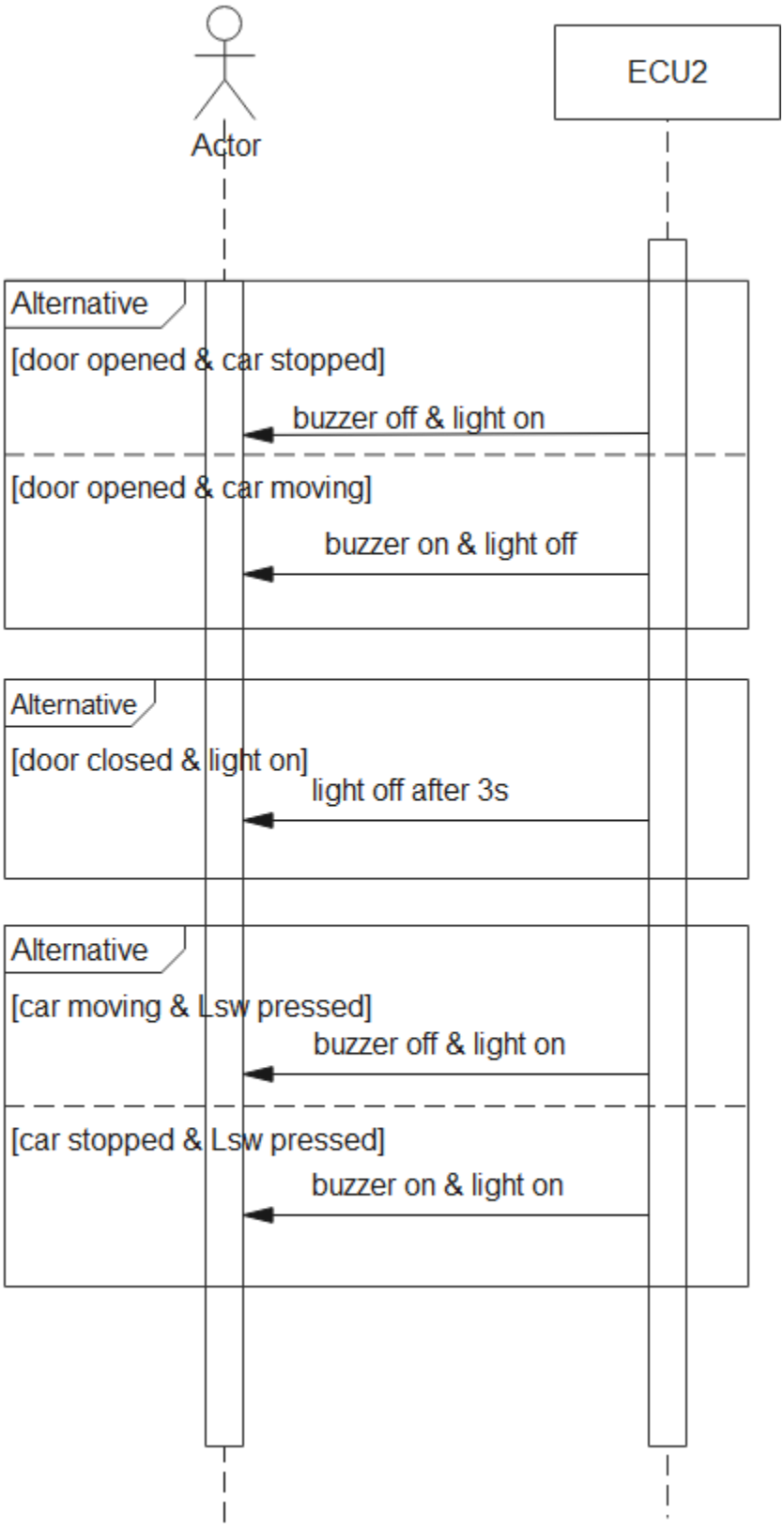
Component diagram



State machine diagram



Sequence diagram



Calculate CPU load for ECU2

Assume we have action task which is responsible for the decision and its periodicity is 20ms

We will assume that the execution time for each task is 1ms

read speed state task: P: 5, D: 5, E: 1

read door state task: P: 10, D: 10, E: 1

read Lsw state task: P: 20, D: 20, E: 1

action task: P: 20, D: 20, E: 1

CPU load: 1/5 + 1/10 + 1/20 + 1/20 = 0.40 ➔ 40%

Bus Load per 1sec:

Total time for data in 1sec = 1000/5 + 1000/10 + 1000/20 = 350ms

Bus load = 35%