

소프트웨어 공학 개론

[2017SE_B][Assignment #1]

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Statement Of Purpose-RVC

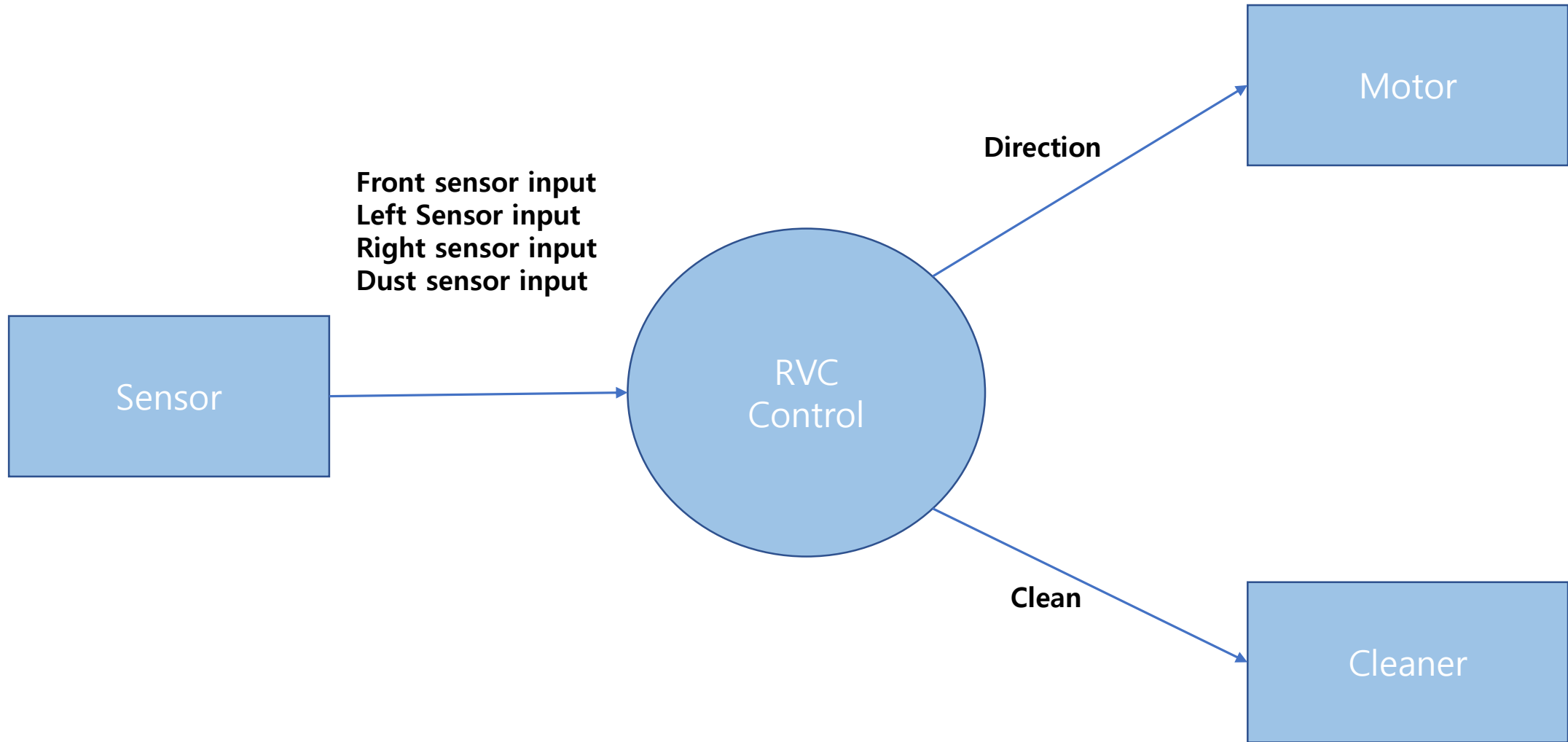
Robot Vacuum Cleaner (RVC)

- An RVC automatically cleans and mops household surface.
- It goes straight forward while cleaning.
- If its sensors found an obstacle, it stops cleaning, turns aside and goes forward with cleaning.
- If it detects dust, power up the cleaning for a while.
- We do not consider the detail design and implementation on HW controls.
- We only focus on the automatic cleaning function.

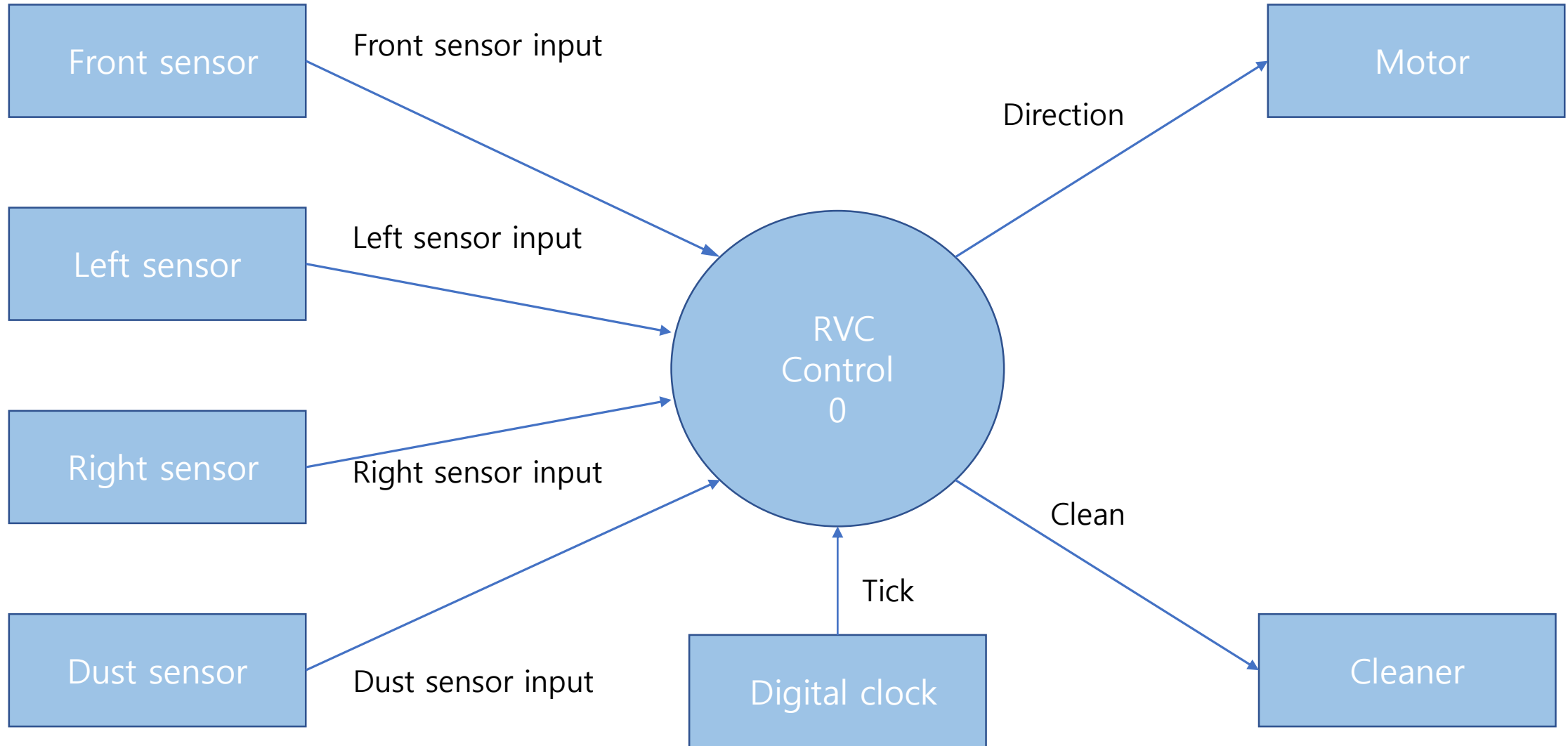
Event List (RVC)

Input/output Event	Description
Front Sensor Input	Detects obstacles in front of the RVC
Left Sensor Input	Detects obstacles in left side of the RVC periodically
Right Sensor Input	Detects obstacles in the right side of the RVC periodically
Dust Sensor Input	Detects dust of the floor periodically
Direction	Direction commands to the motor (go forward/turn left with an angle/turn right with an angle/ stop)
Clean	Turn off/ Turn on /Power-Up

System Context Diagram



DFD-Level 0

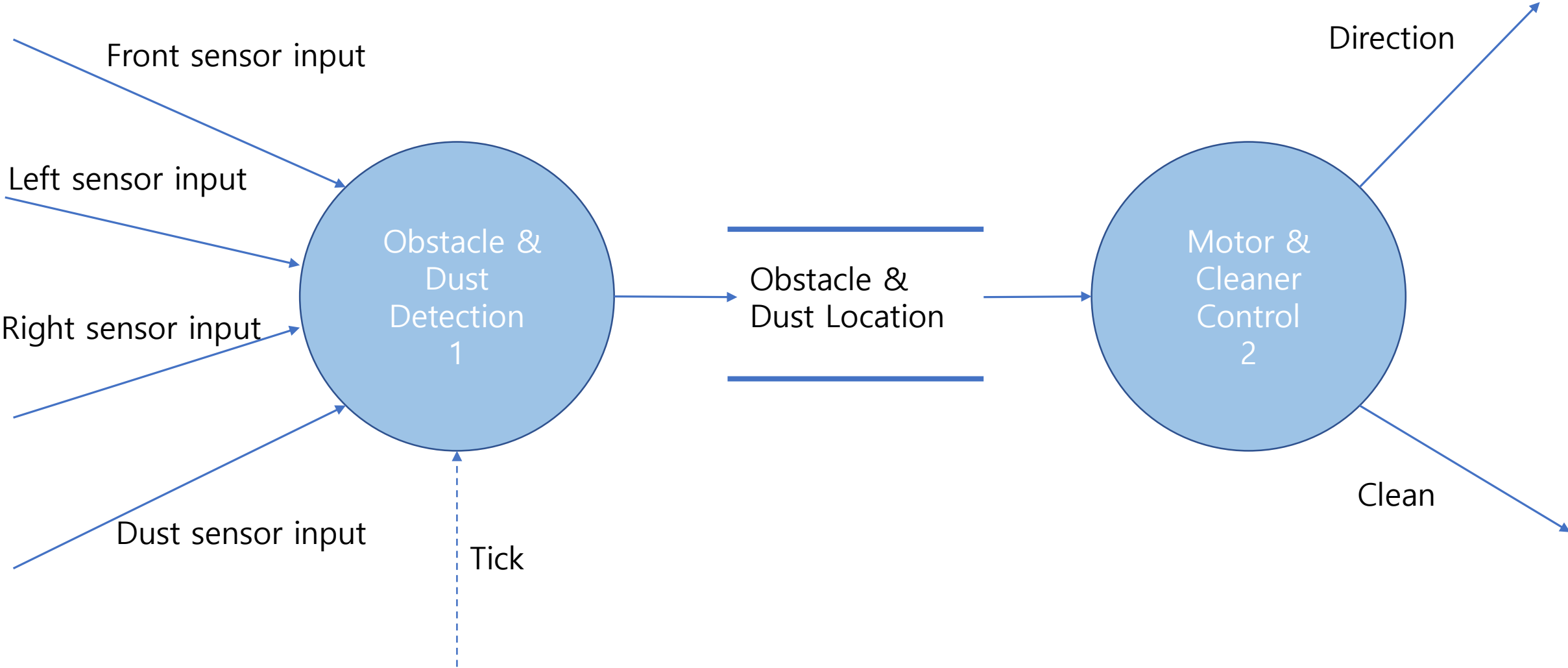


DFD-Level 0

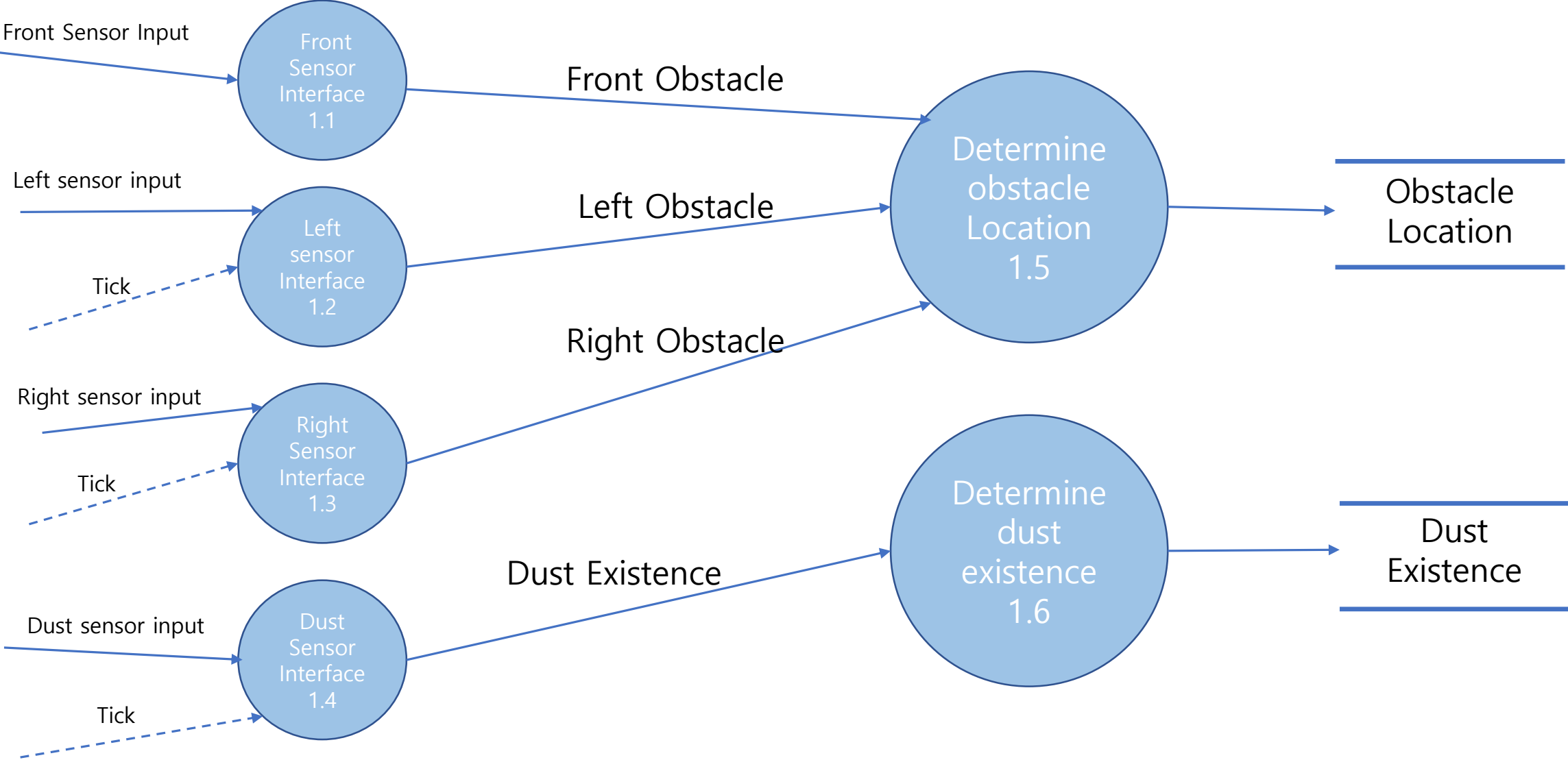
<Data Dictionary>

Input/output Event	Description	Format/Type
Front Sensor Input	Detects obstacles in front of the RVC	True/False, interrupt
Left Sensor Input	Detects obstacles in left side of the RVC periodically	True /False, periodic
Right Sensor Input	Detects obstacles in the right side of the RVC periodically	True/False, Periodic
Dust Sensor Input	Detects dust of the floor periodically	True/False, Periodic
Direction	Direction commands to the motor (go forward/turn left with an angle/turn right with an angle/ stop)	Forward/ Left/ Right/ Stop
Clean	Turn off/ Turn on /Power-Up	On/ Off/ Up

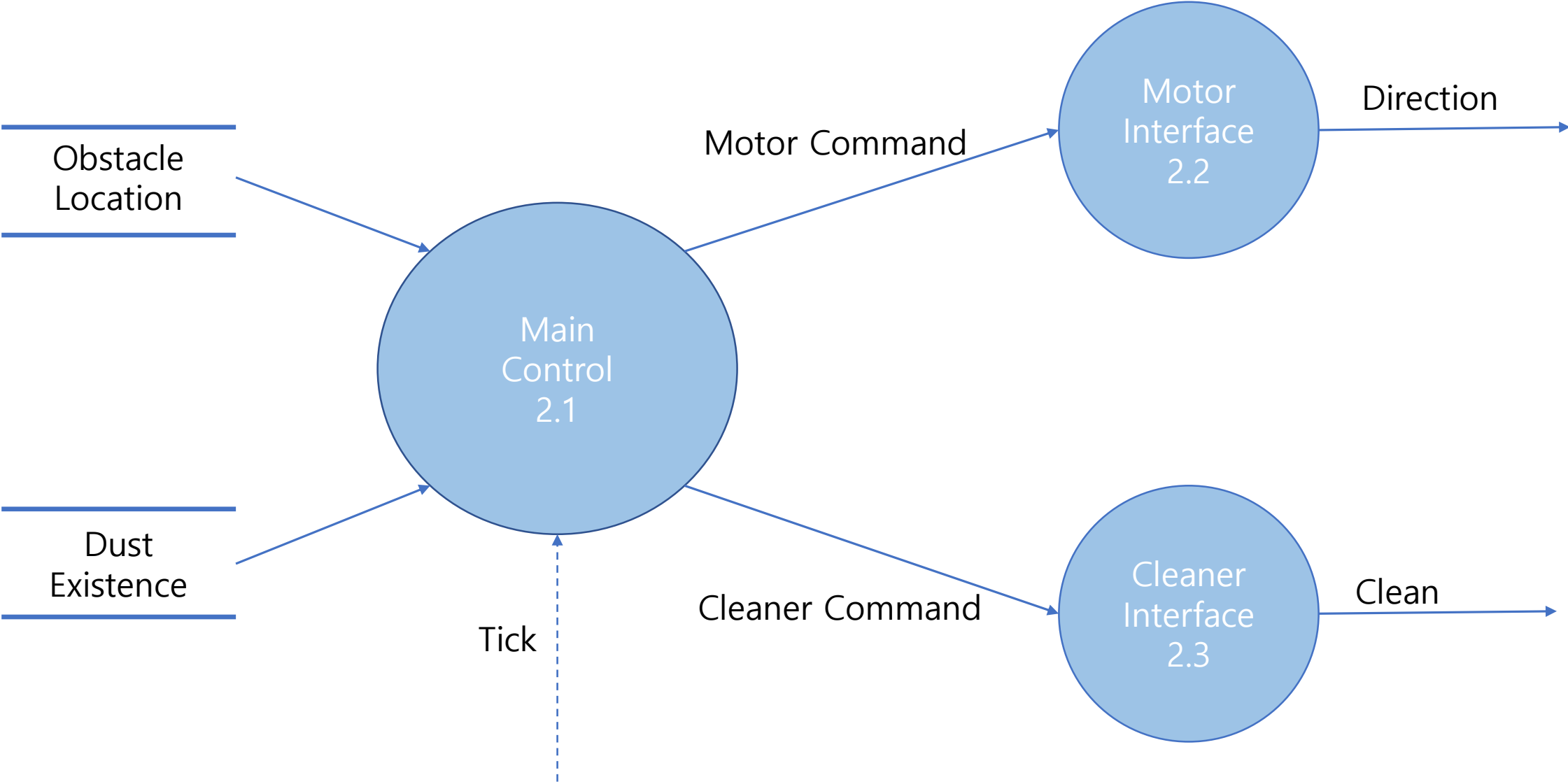
DFD-Level 1



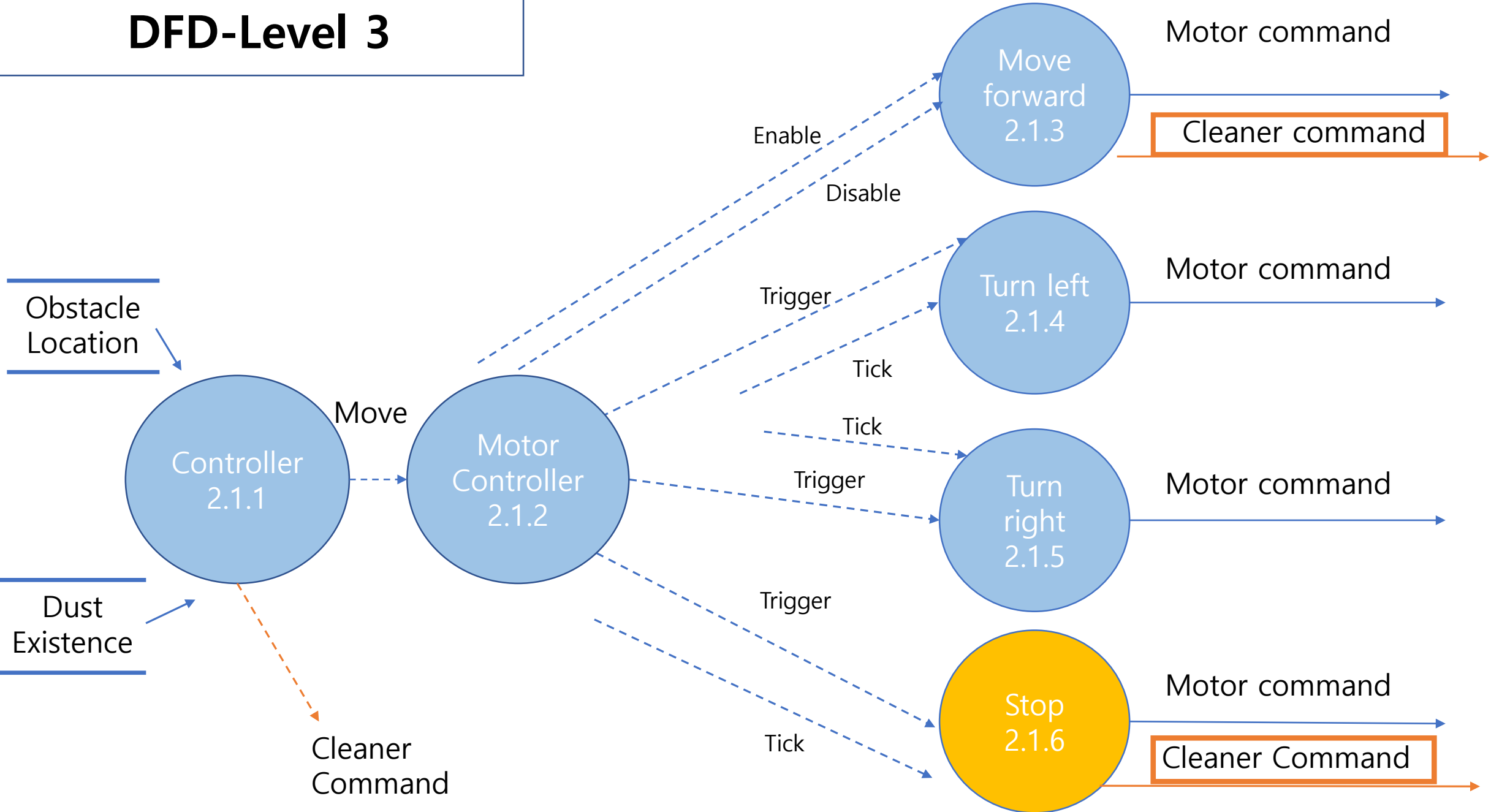
DFD-Level 2



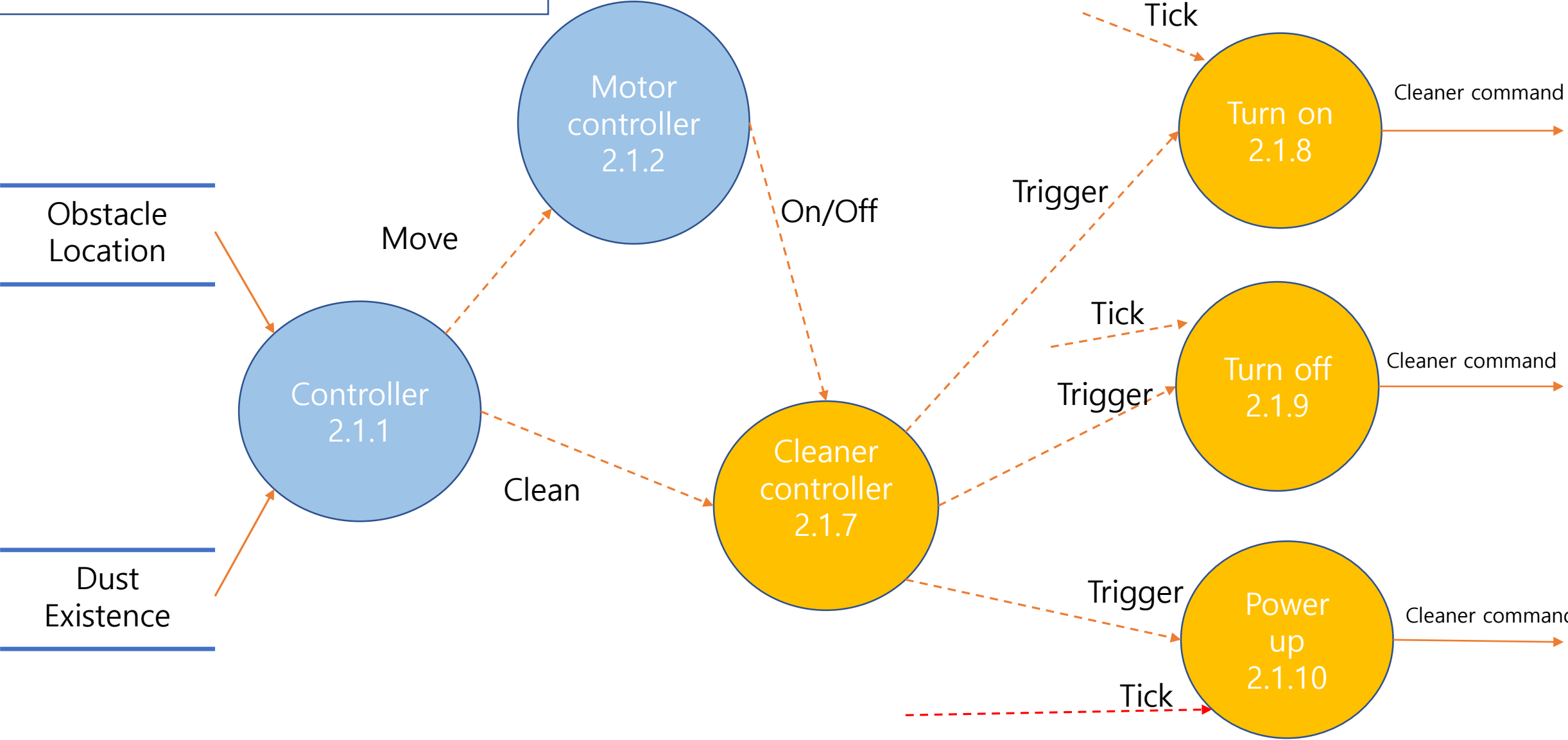
DFD-Level 2



DFD-Level 3

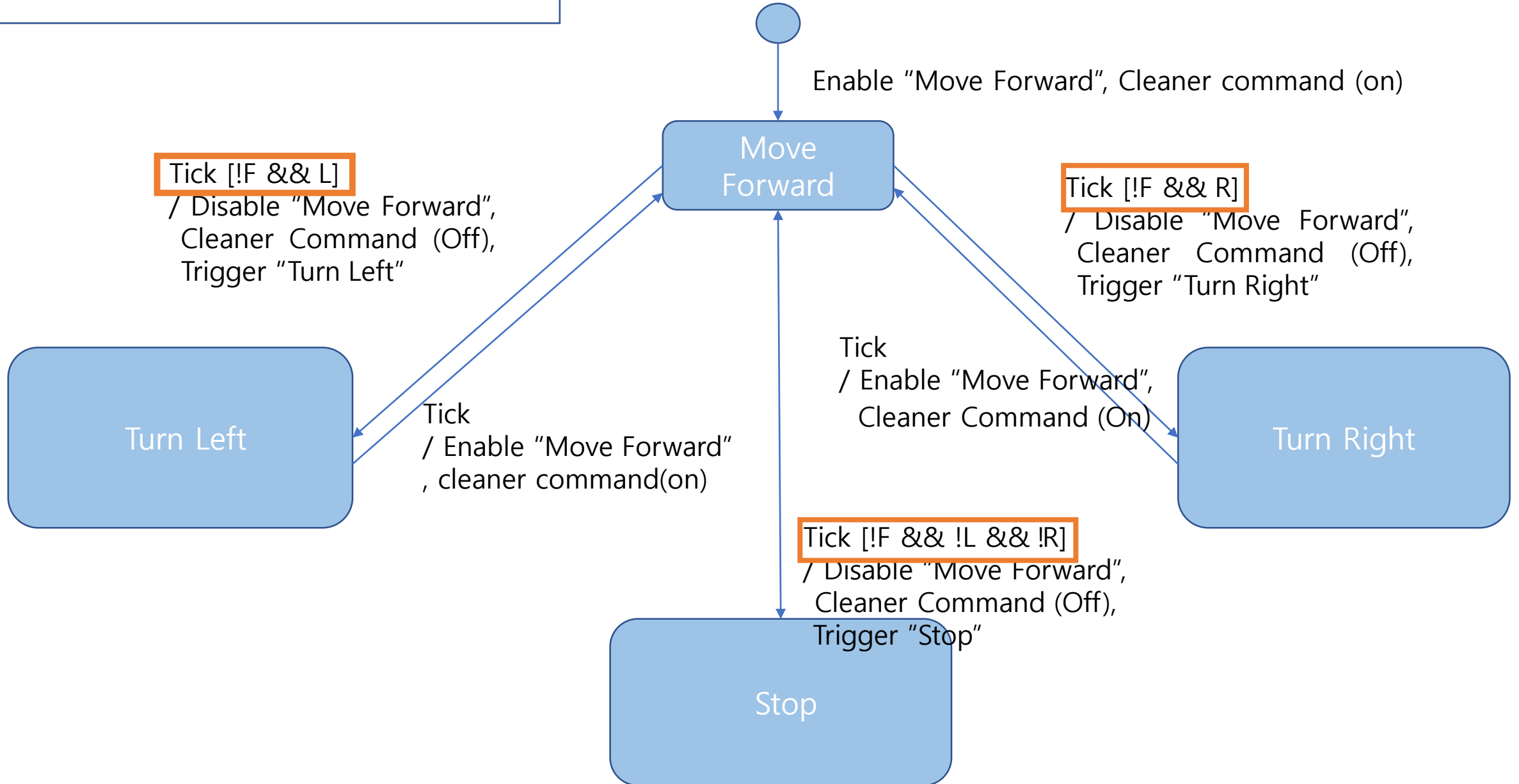


DFD-Level 3



DFD-Level 4

State Transition Diagram for motor controller 2.1.2



DFD-Level 4

State Transition Diagram for Cleaner controller 2.1.7

D: Dust exists

