

Assignment #1 - RVC SA

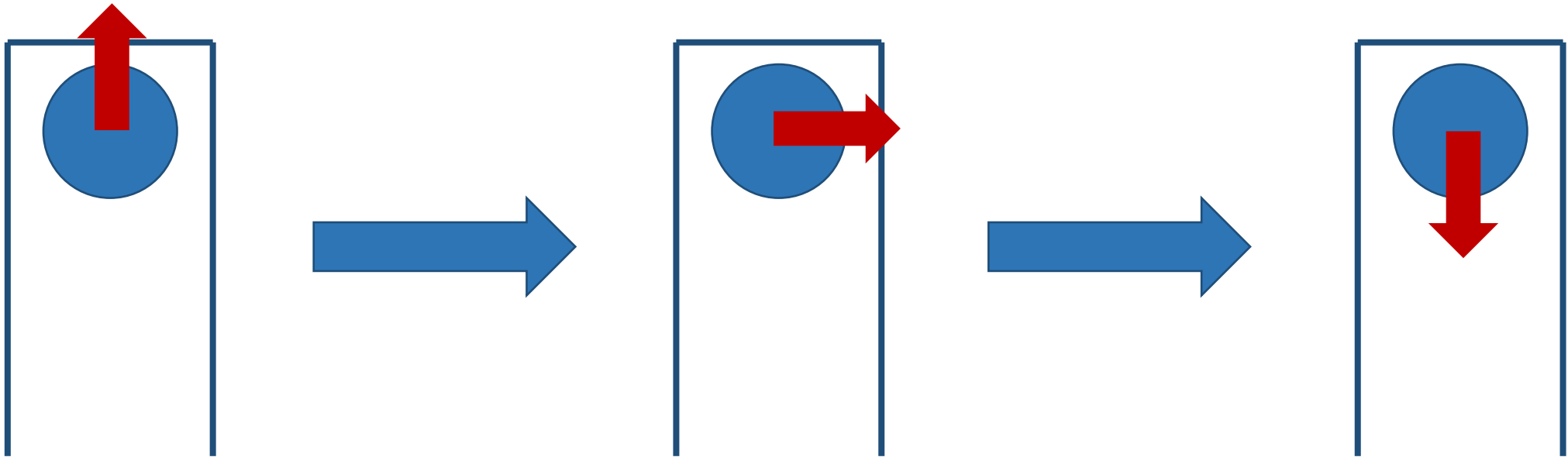
Problems

- 영구적으로 멈출 수 있음(막다른 길에 도달한 경우)
- 먼지의 유무를 전혀 고려하지 않음
- 벽만 타고 이동하는 경우가 생길 수 있음
- 왼쪽, 오른쪽 모두 장애물이 있는 경우를 고려하지 않음

Analysis

막다른 길에 도달한 경우(앞, 왼쪽, 오른쪽 전부 장애물이 있는 경우)

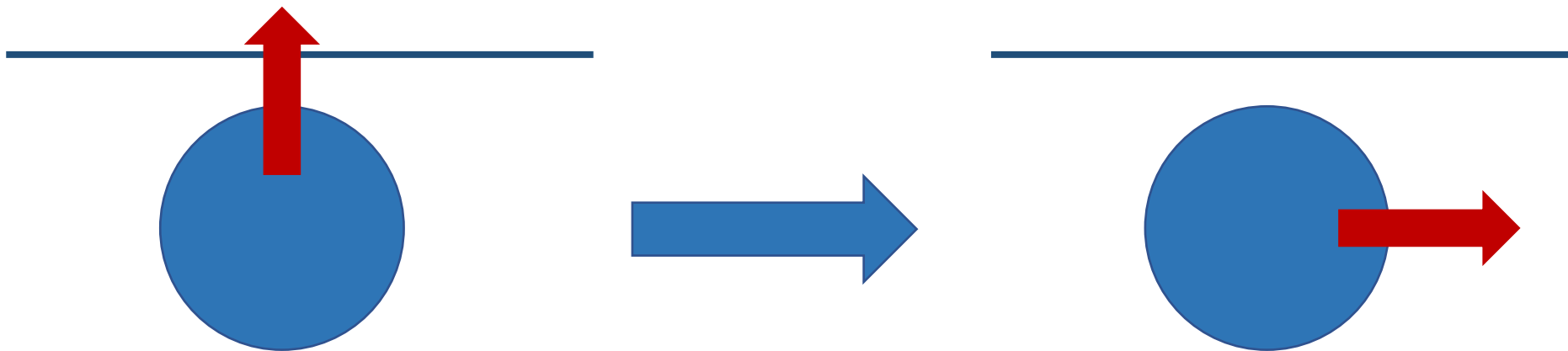
- 'Turn Right' 2번 호출하여 반대 방향으로 돌림 ('Turn Back' 이라 정의)



Analysis

왼쪽, 오른쪽 모두 장애물이 없는 경우

- 무조건 오른쪽으로 돌도록 설정



Analysis

가고자 하는 방향 앞에 먼지가 있을 경우

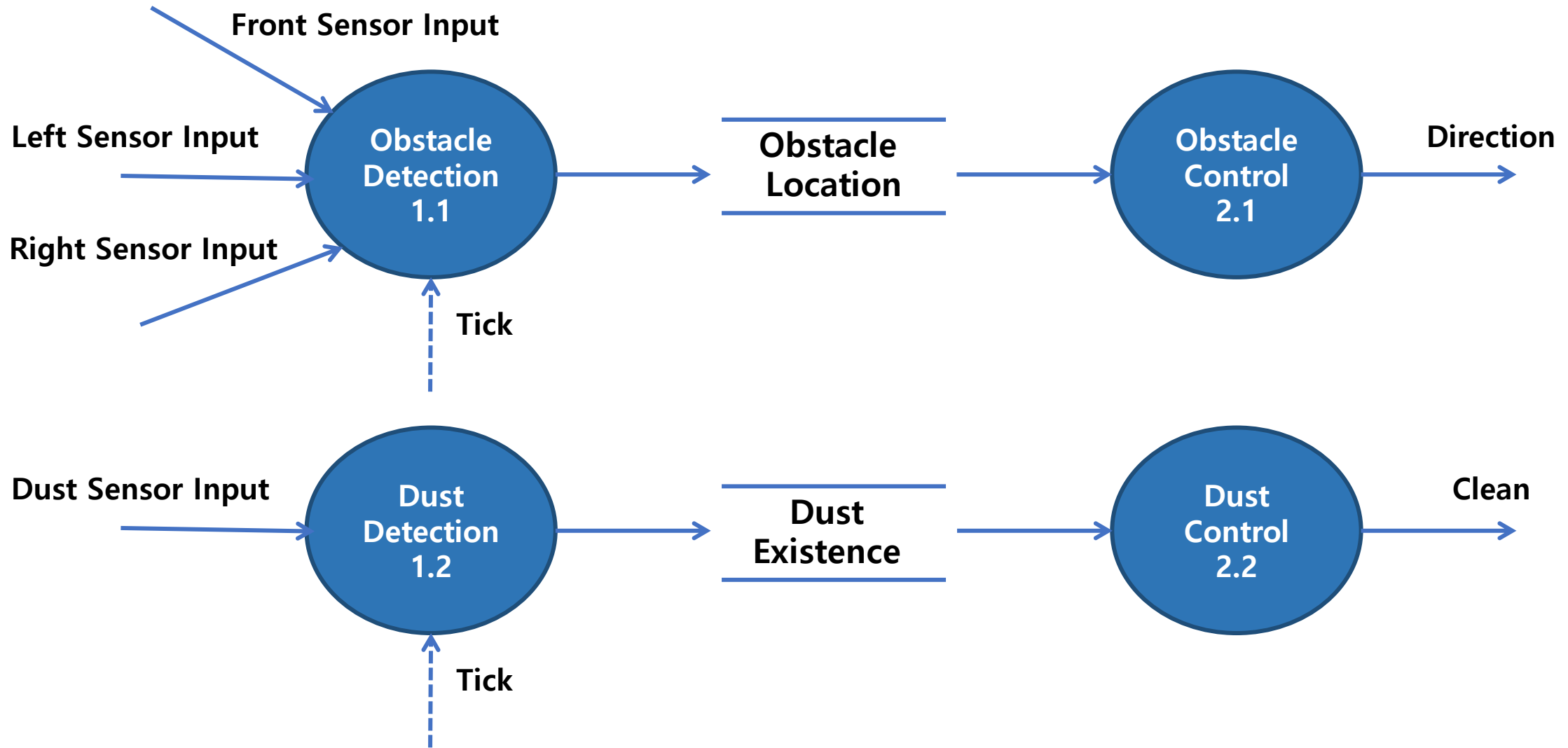
- 먼지 상태 확인 후 앞으로 가기 명령 실행

Consideration of Dust

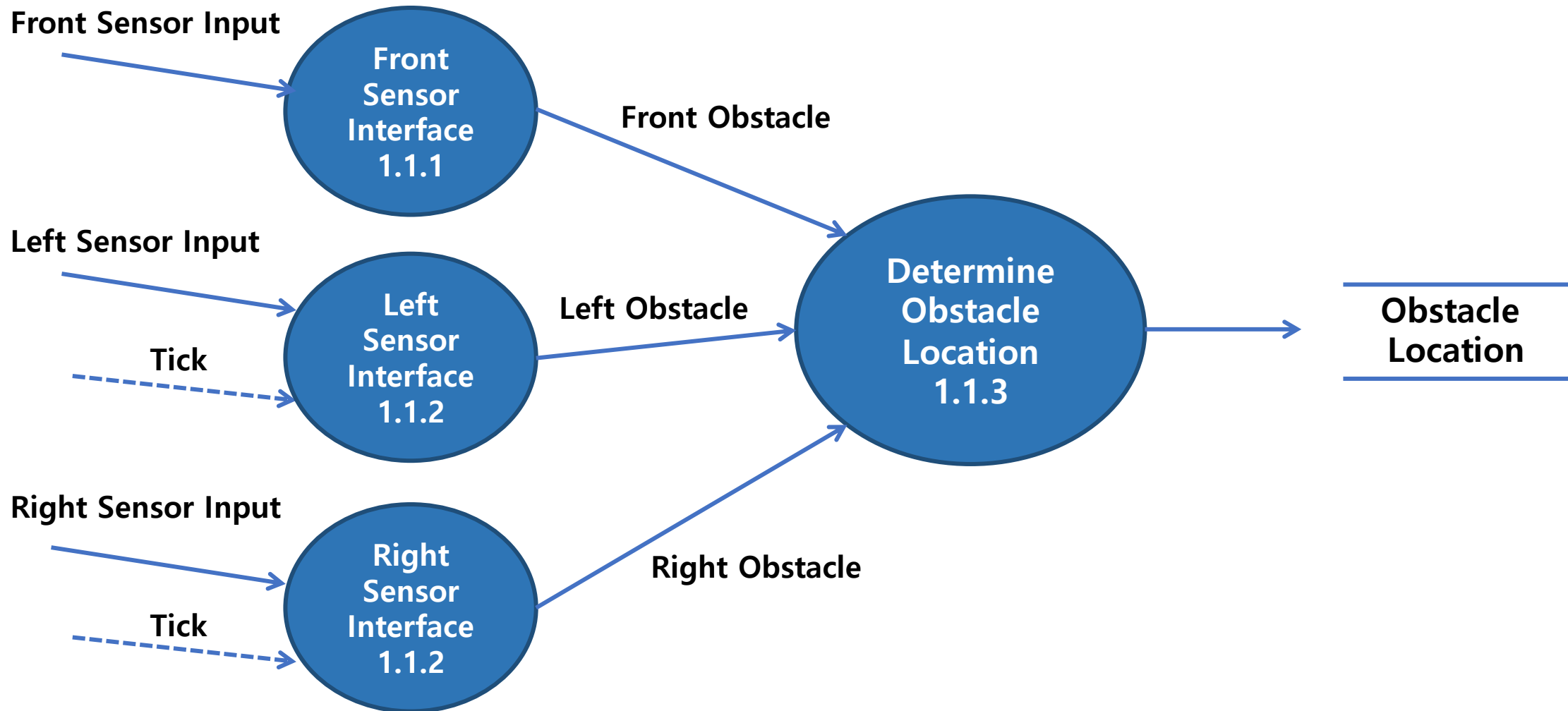
컨트롤러 2개로 분할

- Obstacle Controller – 오로지 장애물, 방향만을 처리
- Dust Controller – 오로지 먼지만을 처리

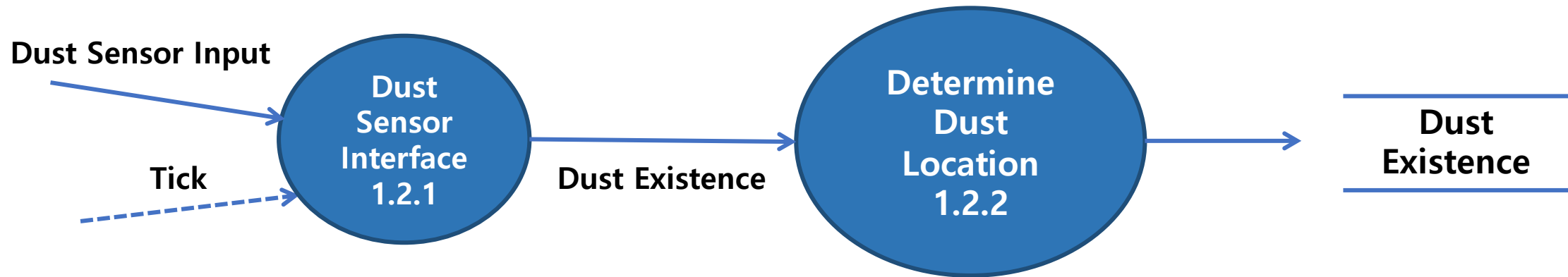
DFD Level 1 (revised)



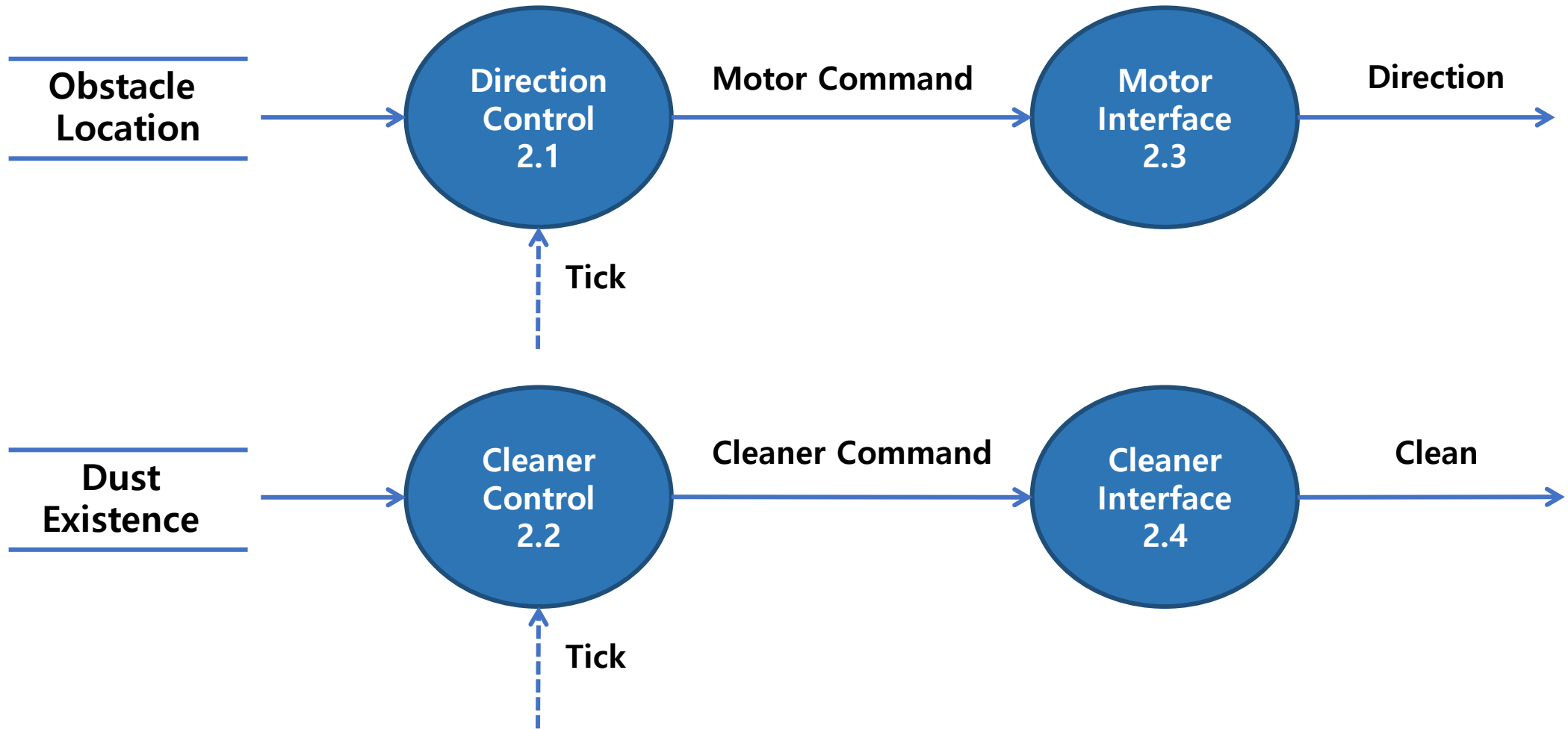
DFD Level 2 (revised)



DFD Level 2 (revised)



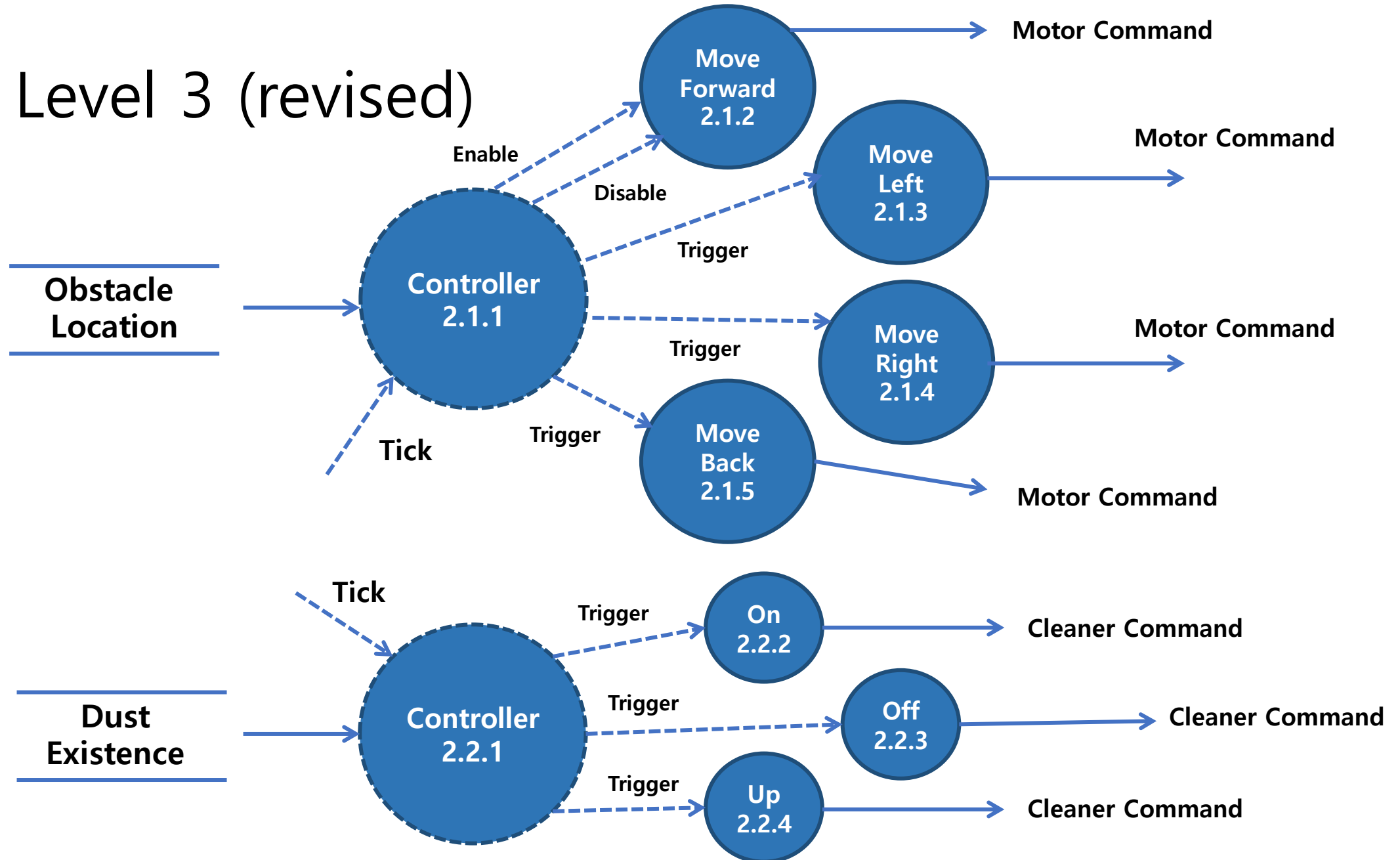
DFD Level 2 (revised)



Command Procedure

1. Check for obstacles
2. If obstacles → Trigger Turn command & Disable Cleaner
3. Enable Cleaner
4. Check for dust
5. If dust → Trigger Cleaner Power-up
6. Trigger Forward command

DFD Level 3 (revised)

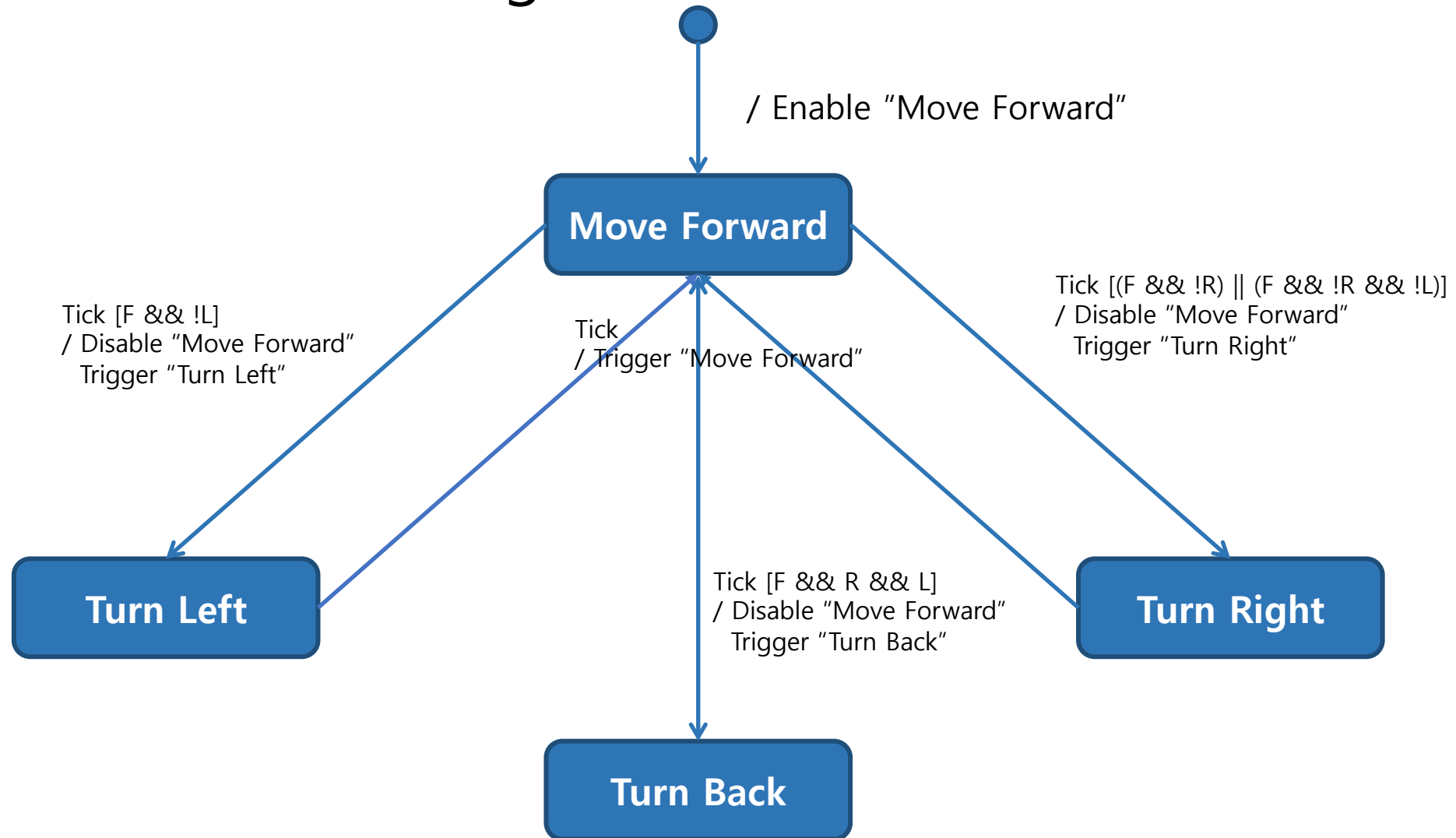


Action Configuration

Actions by state

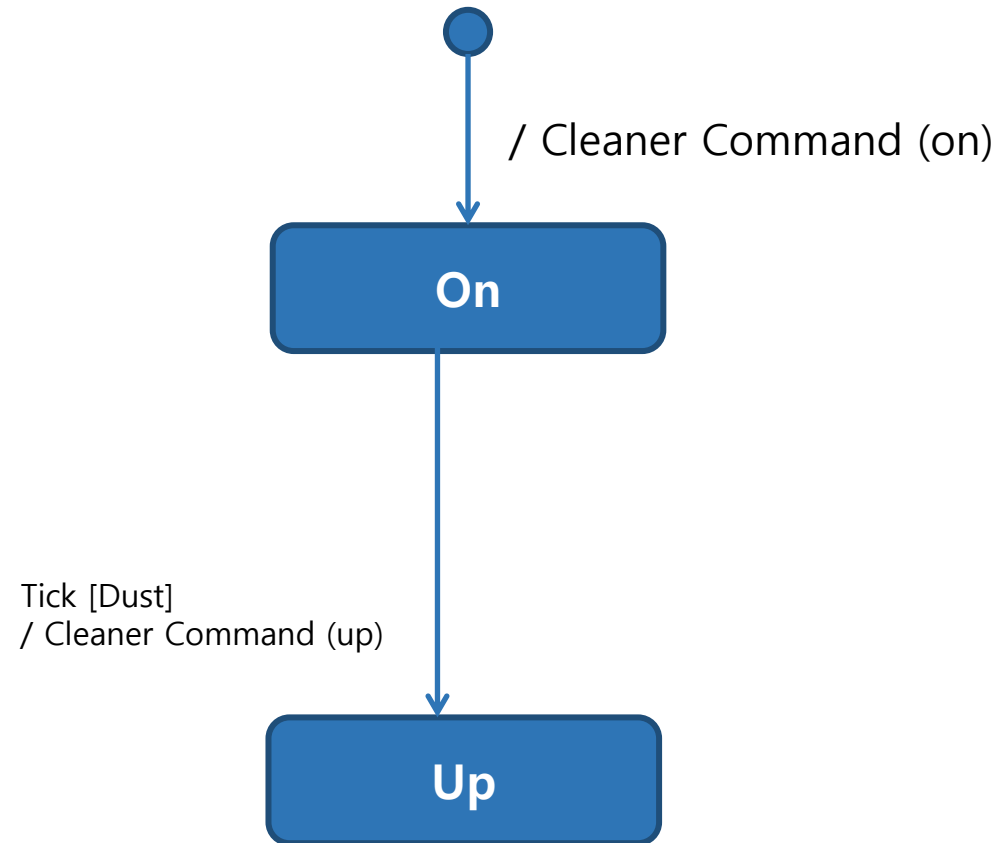
- $F \ \&\& \ L \ \&\& \ R \rightarrow$ Trigger "Turn Back"
- $(F \ \&\& \ !R) \ || \ (F \ \&\& \ !L \ \&\& \ !R) \rightarrow$ Trigger "Turn Right"
- $F \ \&\& \ !L \rightarrow$ Trigger "Turn Left"
- Dust \rightarrow Cleaner Command(Up)

DFD Level 4 (revised) System Context Diagram for Controller 2.1.1



DFD Level 4 (revised)

System Context Diagram for Controller 2.2.1



Final DFD

