

File System

OSLC_Elab

Requirement ID	Name	Description	Trace to Source
R1	Sense Line	The robot must sense a black line	URI#1
R2	Robot Speed	The robot must move faster than 5cm/sec	URI#2

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Line Follow Robot SysML Context Model

The diagram illustrates the SysML Context Model for a Line Follow Robot, showing the relationship between the CDV (Context Definition View) and the RCV (Requirement Context View).

CDV Robot Requirements

- Stakeholders:**
 - System Engineer** (Stakeholder)
 - Sensor manufacturer** (Stakeholder)
 - Actuator manufacturer** (Stakeholder)

RCV Robot Requirements in Context

- System Engineer** (Actor)
- Use Cases:**
 - Sense black line** (Use Case)
 - Must not move too fast** (Use Case)
- External Actors:**
 - Sensor manufacturer** (Actor)
 - Actuator manufacturer** (Actor)

Relationships:

- The **System Engineer** actor is associated with both **Sense black line** and **Must not move too fast** use cases.
- The **Sense black line** use case is associated with the **Sensor manufacturer** actor.
- The **Must not move too fast** use case is associated with the **Actuator manufacturer** actor.
- Traces (dashed arrows labeled **<<trace>>**) connect the **Sensor manufacturer** and **Actuator manufacturer** stakeholders in the CDV to their respective actors in the RCV.


```
<<trace>>
```

```
<<trace>> .
```

Sense black
line

Must not move too fast

anufacturer



Actuator manufacturer

```
classDiagram
    class Robot
    class Controller
    class Body_and_Motor["Body and Motor"]
    class Sensor

    Robot "1" *-- "0..*" BaseClass
    class BaseClass {
    }
    BaseClass <|-- Controller
    BaseClass <|-- Body_and_Motor
    Controller "1" *-- "0..*" Sensor
```

Robot

Controller

Body and Motor

Sensor

The diagram shows a large rectangle labeled **r: Robot** at the top. Inside this rectangle, there are three smaller rectangles: **c: Controller** on the left, **s: LibrarySensor** on the top right, and **b: Body and Motor** on the bottom right. There are four directed arrows: one from **c: Controller** to **s: LibrarySensor**, one from **c: Controller** to **b: Body and Motor**, one from **s: LibrarySensor** to **c: Controller**, and one from **b: Body and Motor** to **c: Controller**. This indicates bidirectional communication between the controller and both the sensor and the body/motor.

r: Robot

s:
arySensor

b: Body and Motor

c: Controller

Line Follow Robot SysML Architectural Model