

OCL Specifications for Given Requirements

1. Each sensor deployed by the system must have a unique id (do not use isUnique).

context Sensor

inv: self.deployed-> forAll(s1, s2 | s1 <> s2 implies s1.sensorID <> s2.sensorID)

2. All sensors deployed in the system are sensors that are maintained by the system. (In other words, the system does not deploy a sensor which is not registered.)

context Sensor

inv: self.deployed-> forAll(s1 | SensorRegistry.getSensor(s1.getSensorID()).notEmpty() implies
s1.getDeployedStatus = true)

3. Every deployed sensor must be associated with a location that exists in the corresponding location registry.

context Sensor

inv: self.deployed->forAll(s1 |sensorLocationPairTable.getLocation(s1).notEmpty() and
LocationRegistry->exists(location | location = sensorLocationPairTable.getLocation(s1)) implies
s1.getDeployedStatus() = true)

4. Every location maintained by the system is associated with a unique sensor.

context LocationRegistry

inv: self.location -> forAll (loc1, loc2| loc1 <> loc2 implies SensorLocationPairTable.getSensor(loc1) <>
SensorLocationPairTable.getSensor(loc2))