Sentient VOC Monitoring System

Use Case: <name>

Version <1.0>

Revision History

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| **Date** | **Version** | **Description** | **Author** |
| <dd/mmm/yy> | <x.x> | <details> | <name> |
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Use Case: <name>

# <name>

## Brief Description

This use case gives the car driver the ability to change the throttle for propulsion of the vehicle. This will allow the power distribution to be increased or decreased dependent on what the driver wishes the vehicle to do.

## Requirements Trace

1.1

## Involved Actors

Driver

## Preconditions

* The vehicle is running.

## Post conditions

* Vehicle throttle setting is updated to the new throttle request.

## Invariants

* Throttle value is in range of THROTTLE\_MIN and THROTTLE\_MAX.

# Flow of Events

## Basic Flow

This use case starts when the vehicle driver wants to either speed up or slow down the vehicle through the manipulation of the vehicle throttle.

1. Driver changes the current setting of the throttle.
2. The new setting is immediately sent to the system.
3. System translates the new setting to a digital value.
4. System sanity checks the new throttle value.
5. System stores the new throttle value.
6. See extension point use case “Update Power Distribution”.
7. Driver will notice the vehicle velocity change related to their desired throttle setting.

## Alternate Course – None

# Extension Points

Use case “Update Power Distribution” causes system behavior change at step 6.

# Scenarios

## Happy Day

Assumptions: Driver – John

Current Throttle – Set at 10% power request

New Throttle – Update to 30% power request

Steps:

1. John changes the current setting of the throttle from 10% to 30%.
2. The new setting of 30% is immediately sent to the system.
3. System translates the new setting to a digital value – 16 bit – 0x0555.
4. System sanity checks the new throttle value against 0 to 0x0FFF.
5. System stores the new throttle value.
6. See extension point use case “Update Power Distribution”.
7. John notices the vehicle velocity speed up roughly 20% faster.

## Rainy Day 1 – <description>

Assumptions: Driver – John

Current Throttle – Set at 10% power request

New Throttle – Update to 30% power request

System State – Hybrid Mode

Battery Charge – 15% - Below LOW\_BATT\_WATER\_MARK

Steps:

1. John changes the current setting of the throttle from 10% to 30%.
2. The new setting of 30% is immediately sent to the system.
3. System translates the new setting to a digital value – 16 bit – 0x0555.
4. System sanity checks the new throttle value against 0 to 0x0FFF.
5. System stores the new throttle value.
6. The battery level falls below LOW\_BATT\_WATER\_MARK.
7. See extension point use case “Update Power Distribution”.
8. John notices the vehicle velocity speed up differently since electric motor is no longer engaged.

## Rainy Day 2 – <description>

Assumptions: Driver – John

Current Throttle – Set at 10% power request

New Throttle – Update to 30% power request

System State – Electric Only Mode

Battery Charge – 15% - Below LOW\_BATT\_WATER\_MARK

Steps:

1. John changes the current setting of the throttle from 10% to 30%.
2. The new setting of 30% is immediately sent to the system.
3. System translates the new setting to a digital value – 16 bit – 0x0555.
4. System sanity checks the new throttle value against 0 to 0x0FFF.
5. System stores the new throttle value.
6. The battery level falls below LOW\_BATT\_WATER\_MARK.
7. See extension point use case “Update Power Distribution”.
8. John notices the vehicle velocity speed up differently since the vehicle has switched from electric motor to internal combustion engine.