

# **Health Information System & Human Physical/Emotional Status monitoring technology**



**LIFE SCIENCE**  

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**TECHNOLOGY**

# Health Information System

HMC U-Sensor

0.54 CO<sub>2</sub>



12:30 PM



Health Information sytem



Stress/Emotions



Blood Pressure



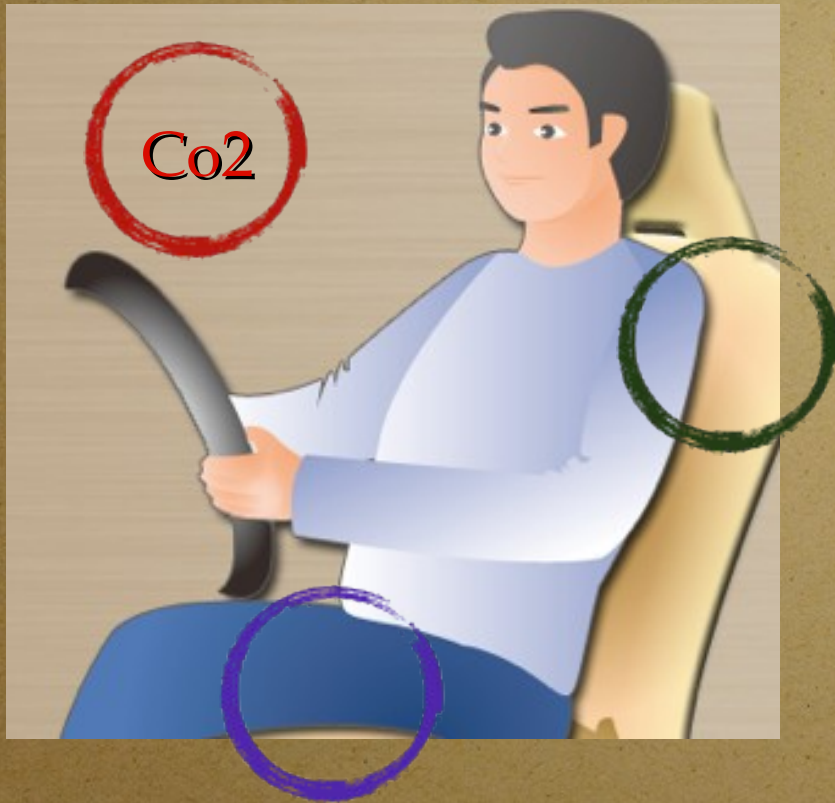
Drowsiness



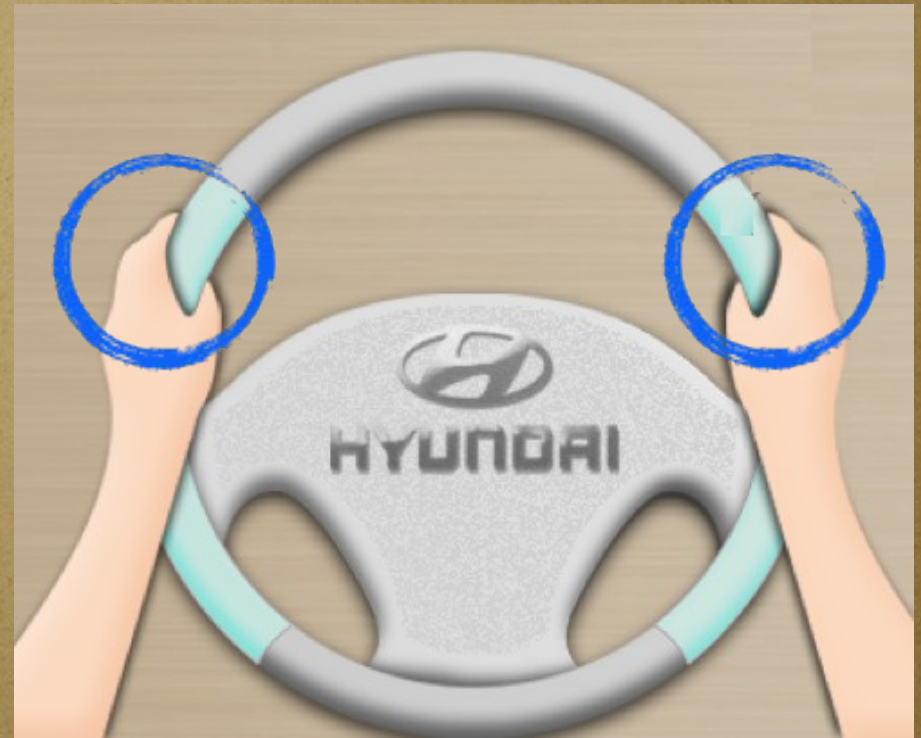
History



# Data Collection for Driver



- **cECG(Capacitive ECG)**
- **PPG(Photo Plethysmograph)**
- **Pressure(On/Off)**
- **Co2(Air)**



- **BIA(Body Impedance Analysis)**
- **ECG(ElectroCardiogram)**
- **ST(Skin Temperature)**
- **GSR(Galvanic Skin Resistance)**

# Car Seat



**Measurement : cECG, PPG, Pressure, Co2**



# Steering Wheel

HMC U-Sensor

0.54 CO<sub>2</sub>



12:30 PM



Sensors



Stress/Emotion



Blood Pressure



Drowsiness



History

**Mode Change : BIA, ECG, ST, GSR**



# Blood Pressure

HMC U-Sensor

0.54 CO<sub>2</sub>



12:30 PM



Name

David

Height

6.1 ft

Weight

160 lb

Age

39

Gender

M

Download



Stress/Emotion



Blood Pressure



Drowsiness



History

## Blood Pressure

## Blood Pressure Record



120/80

Systolic BP(mmHg)

95



Diastolic BP(mmHg)

70



Your Blood Pressure is normal.

# BP (Blood Pressure)



**Low**



**Normal**



**High**

# BMI (Body mass index)



**Low-weight**



**Normal**



**Over-weight**



**Obesity**



# Drowsiness (Seat/Steering Wheels(SSW))

SSW identifies level 3 to 5 as distinct levels. This allows either operator or dispatcher intervention to help driver to reduce to a lower level.

Stage	State	Action	Result	Seat, Wheel	Camera
9	Asleep	cannot drive	-	Yes	Yes
8	Drowsy	coffee + NASA powernap	may not be able to resist deep sleep	Yes	Yes
7	MSLT Severe Sleepiness	coffee + NASA powernap	60 minutes return to level 5 or 6	Yes	Yes
6	MSLT Troublesome Sleepiness	coffee followed by 30 minute NASA powernap	45 minutes return to level 4 or 5	Yes	Yes
5	MSLT Manageable Sleepiness	biofeedback "buddy" intervention	20 minute return to level 3 or 4	Yes	
4	Sleepiness/ Fatigue	Audio biofeedback command - click fingers	5-10 mins goes to level 1 or 2	Yes	
3	Inattentive/ Complacence	Audio Warning	Goes back to level 1 or 2	Yes	
2	Relaxed/ Neutral	None		Yes	
1	Fully Wakeful/ Engaged	None		Yes	

# Emotion, Drowsiness (1)

HMC U-Sensor

0.54 CO<sub>2</sub>



12:30 PM



Emotions



Comfortable

Drowsiness



Drowsy

Pulse Rate

59 BPM



Bradycardia

Blood Pressure

DIA/SYS

80/120



Stress/Emotion



Blood pressure



Drowsiness



History

Wake Up !



# Emotion, Drowsiness (1)

HMC U-Sensor

0.54 CO<sub>2</sub>



12:30 PM



Emotions



Excited

Drowsiness



Fully Wakeful

Pulse Rate

90 BPM



Normal

Blood Pressure

DIA/SYS

90/130

Enjoy driving !



Stress/Emotion



Blood pressure



Drowsiness



History

# Emotion



**Drowsy**



**Anxious**



**Comfortable**



**Fully Wakeful**



# Drowsiness

