rb ARHIS

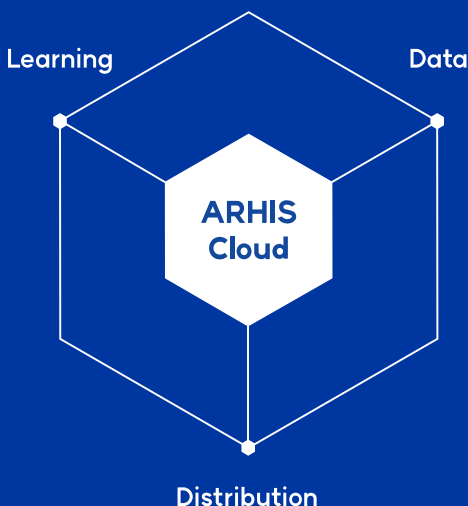# Audio & AI based Road Hazard Information System

ARHIS is a hazard detecting system on the road.
It collects driving sounds on the road and analyzes them in real time to prevent accidents caused by wet or icy road.

ARHIS Device

ARHIS device consists of wireless communication module, accustic sensor, camera and etc. It uses electricity from the road or solar panels. AI model installed in ARHIS device determines road surface condition with sounds.

The accustic sensor collects friction sounds between car tire and the road surface. The AI model classifies the road condition into Dry, Wet, Icy with the collected sounds after data preprocessing for non-driving section and wind noise cancellation.

With additional learning, ARHIS will be able to classify Flooding, Rockfall for disaster warning, Pothole for maintenance and Skid, Crash, Horn sounds for accident warning.
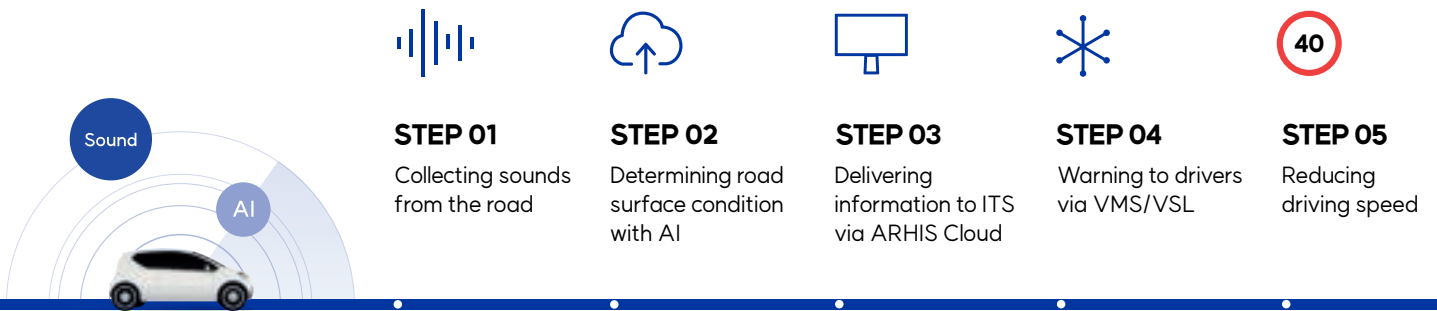
ARHIS Cloud

Learning   Data

ARHIS Cloud

Distribution

AI model requires continuous learning as environments around the road change minute by minute. ARHIS Cloud enables automatic data collection, classification, learning, distribution upon the road condition.

The road condition infomation is provided to ITS or public information system through Open API for smart mobility service.

ITS connected to ARHIS Cloud can check road condition, location, occurance time and immediatly warn the drivers with VMS or VSL. Real-time notification can be sent to the person in charge and salty water spray, road heating system can be automatically turned on.

ARHIS Service Scenario

Sound

AI

STEP 01
Collecting sounds from the road

STEP 02
Determining road surface condition with AI

STEP 03
Delivering information to ITS via ARHIS Cloud

STEP 04
Warning to drivers via VMS/VSL

STEP 05
Reducing driving speed

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Why ARHIS

Section Detection
- The only section detection solution in the world
- Detection range of 70~100m

24/7 Monitoring
- No excessive or insufficient action
- Near zero error rate
- Real-time monitoring

Cost Saving
- No patrol manpower
- Low cost deployment

Proven Solution
- 3 awards from competitions
- Installed 363 sites in Korea

ARHIS History

2021

04

ITS Innovative Tech award 2021

by Ministry of Land, Infrastructure and Transport

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IoT Awards 2021

by the minister of Ministry of Science and ICT

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Patent registration in Korea

In the process of applying for global patent "PCT"
Patent for technology to determine black ice by the sound of driving

2022

03

ISO 9001 certificate

08

Smart Construction Challenge 2022

by Ministry of Land, Infrastructure and Transport

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