

# Intelligent Maintenance for Railway Systems



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# OUTLINE



Problems of Railway Track



Solution for The Problems



Intelligent Maintenance

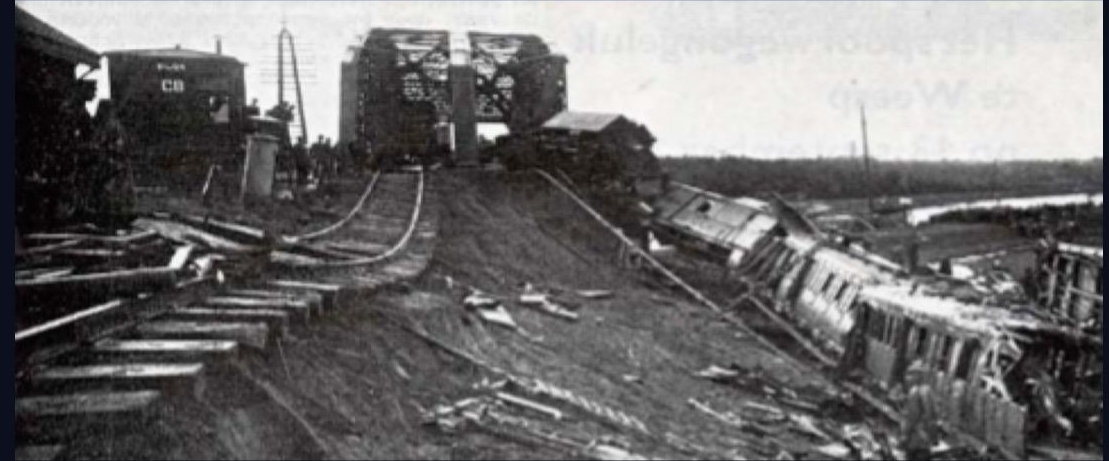
# Problems of Railway Track

## Current Problems



### Sagging Track

Need to check the mainlines periodically with measuring train



### Landslide

A landslide does not wait for the measuring train to come

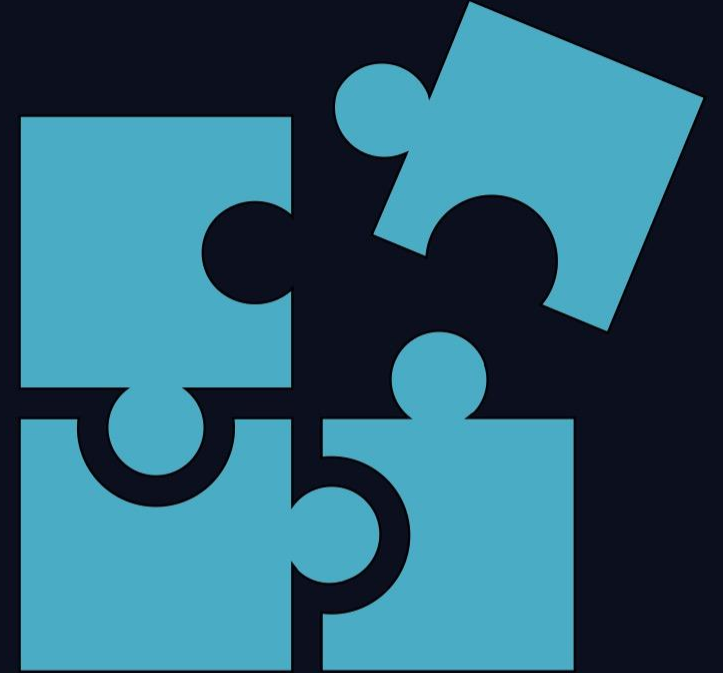


### Shifting Track

A shift of track needs immediate action

# Problems of Railway Track

## Current Solution



## Measuring Train Is Not The Solution

- Need time to deploy
- No operation during deployment
- Cannot detect sudden incident such as landslide

# Solution for The Problems

## Better Solution



**Turning every train into a measuring train**



**Build database of every operational track**



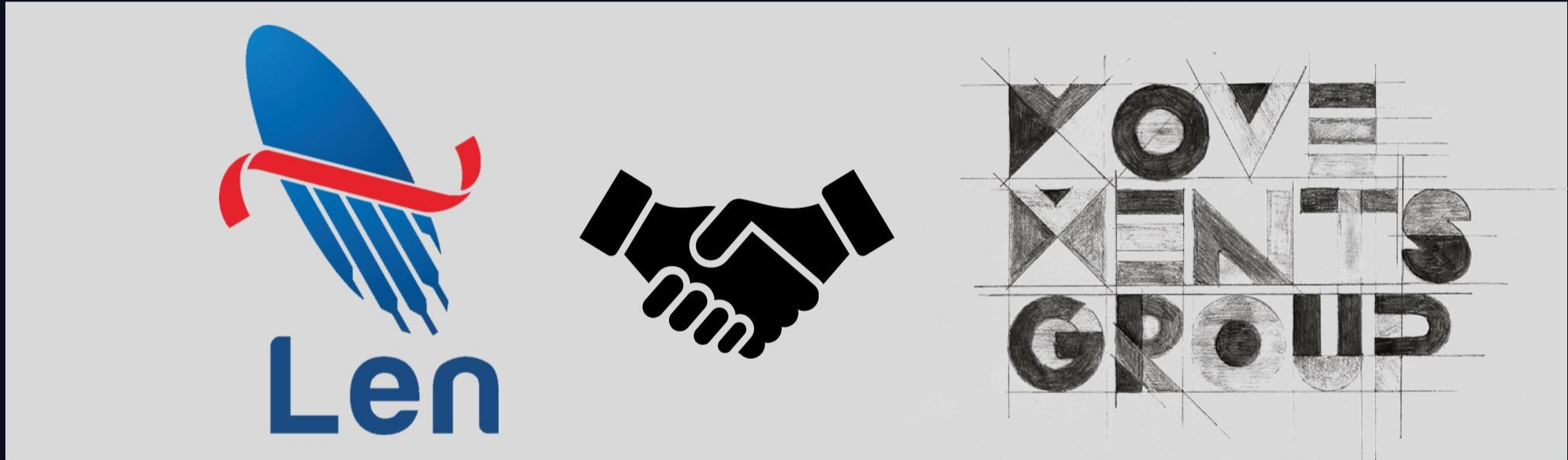
And we will:

- notice every change in the track
- expand the knowledge of the track



# Solution for The Problems

## Collaboration for Artificial Intelligence (AI)



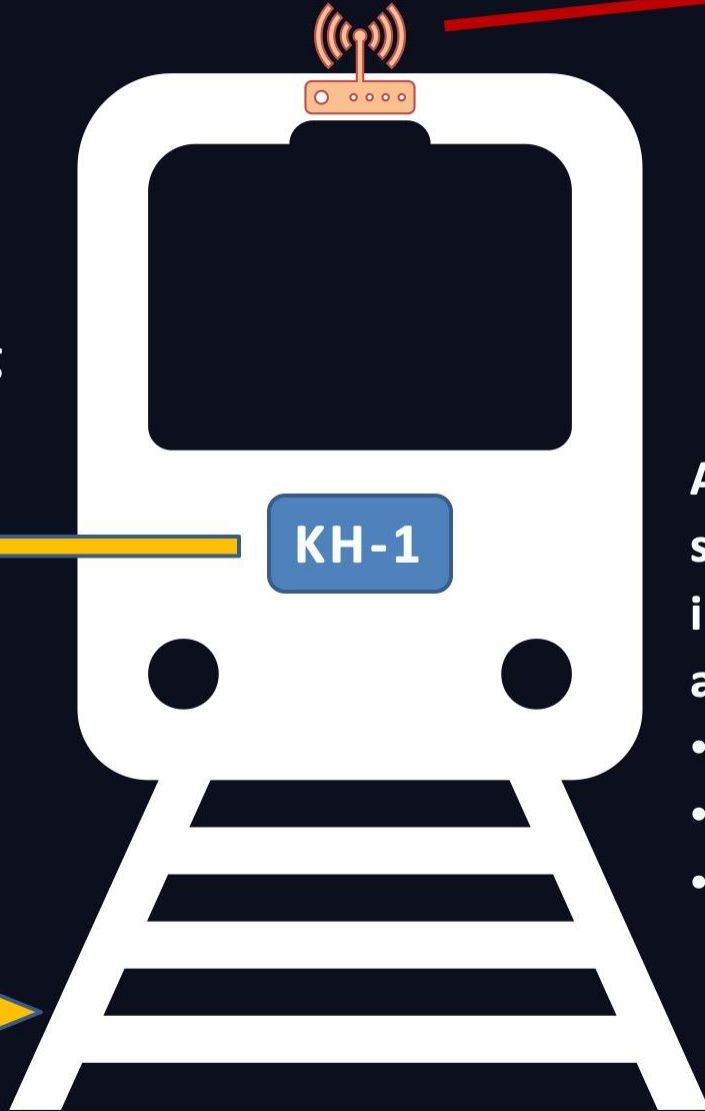
**KH-1 – Sensor for Artificial Intelligence**



# Intelligent Maintenance

## How It Works

KH-1 monitors the track during train operation, creating unique fingerprint of every track



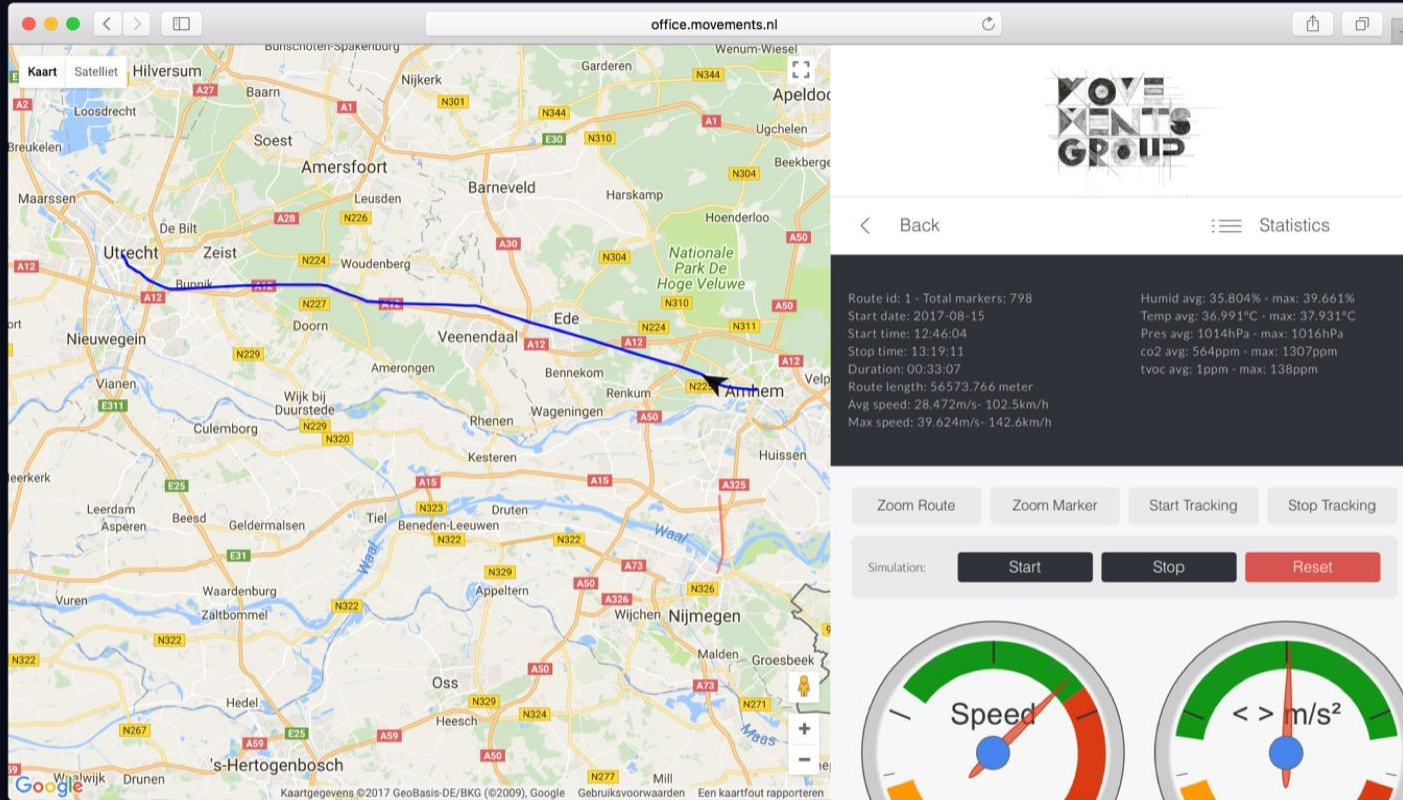
Artificial Intelligence (AI) system collects track information from everywhere and:

- learning all of track data
- real time monitoring
- early detection of problem





# Intelligent Maintenance Artificial Intelligence System



## Advantage of using AI in track maintenance:

- Not dependent on personnel
- Consistency of quality
- Can be duplicated easily

Any train ride with KH-1 are visible and all of the measurements being made can be seen

If the measured graphic is different from the fingerprint, AI system will recognize it and remind the operator to do proper maintenance







# Intelligent Maintenance

## Integration with Office Control Centre



**Intelligent maintenance with KH-1 can be integrated with existing OCC**



*Thank You*



**Len**  
INDUSTRI

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Transportation Business