

OFFICIAL

**2025
SEASON**





PROBLEM: TRAGEDY ON TRACKS?

NEED FOR EARLY DETECTION

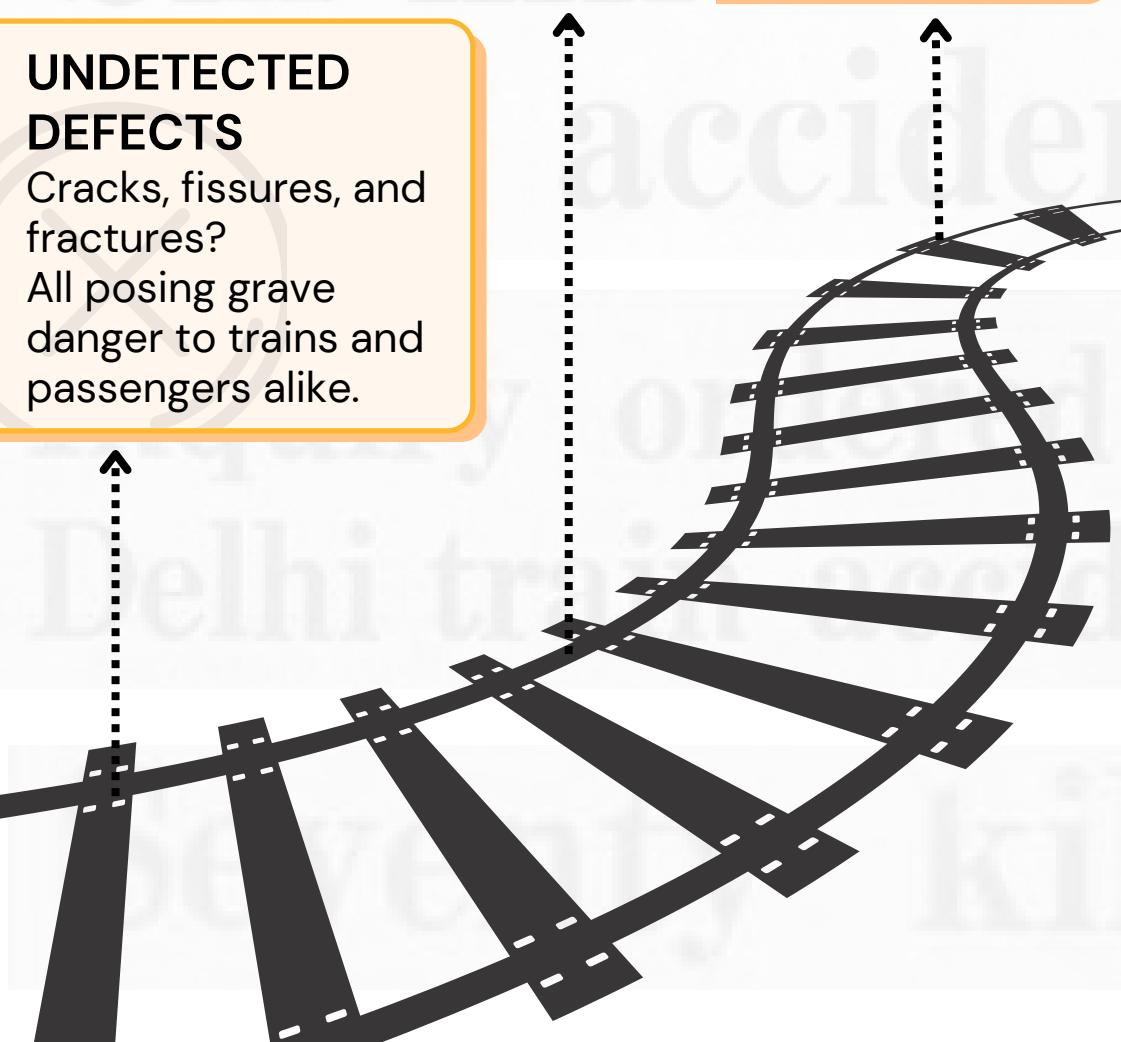
Minor defects leading to major disasters?
Timely reporting can prevent accidents.

INSPECTION AND MAINTENANCE

Infrequent checks?
Human error?
Delayed detection?
So much for a smooth and safe rail journey.

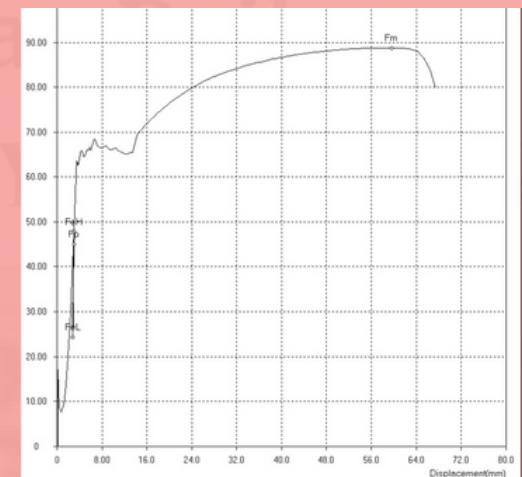
UNDETECTED DEFECTS

Cracks, fissures, and fractures?
All posing grave danger to trains and passengers alike.

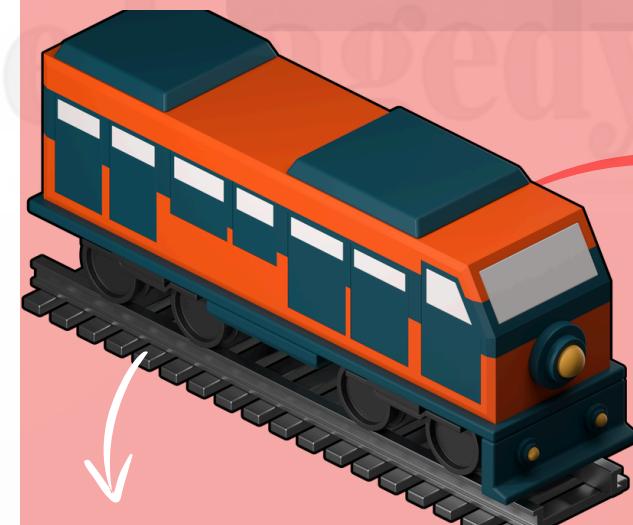


Model Accuracy

We are able to achieve accuracy of approximately 75% on our ML Model

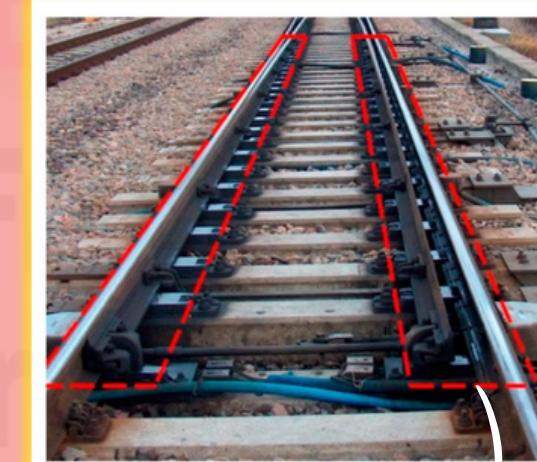


SOLUTION?



What Do We Solve?

Identifies abnormalities in tracks and fasteners in the form of cracks



Data Collection

Efficient data collection using **Arduino** and **ArduCam OV9281 (Global Shutter, 120 FPS)** camera for accurate geotagging

Using ML Model for automated crack detection

We make use of ML Model mostly based out of **InceptionResNetV2**

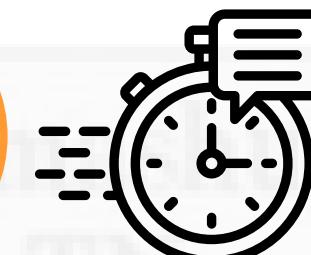
DIFFERENT? ONE OF A KIND

1 BACKED BY RESEARCH
Well researched using several papers on similar problems



2 MAKING USE OF IOT AND ML
Arduino Integrating cameras with Afor precise geo-mapping of cracks

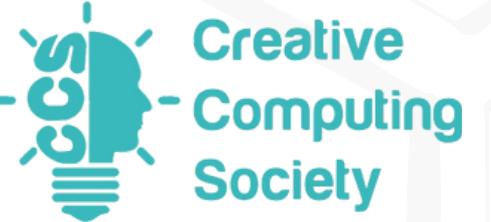
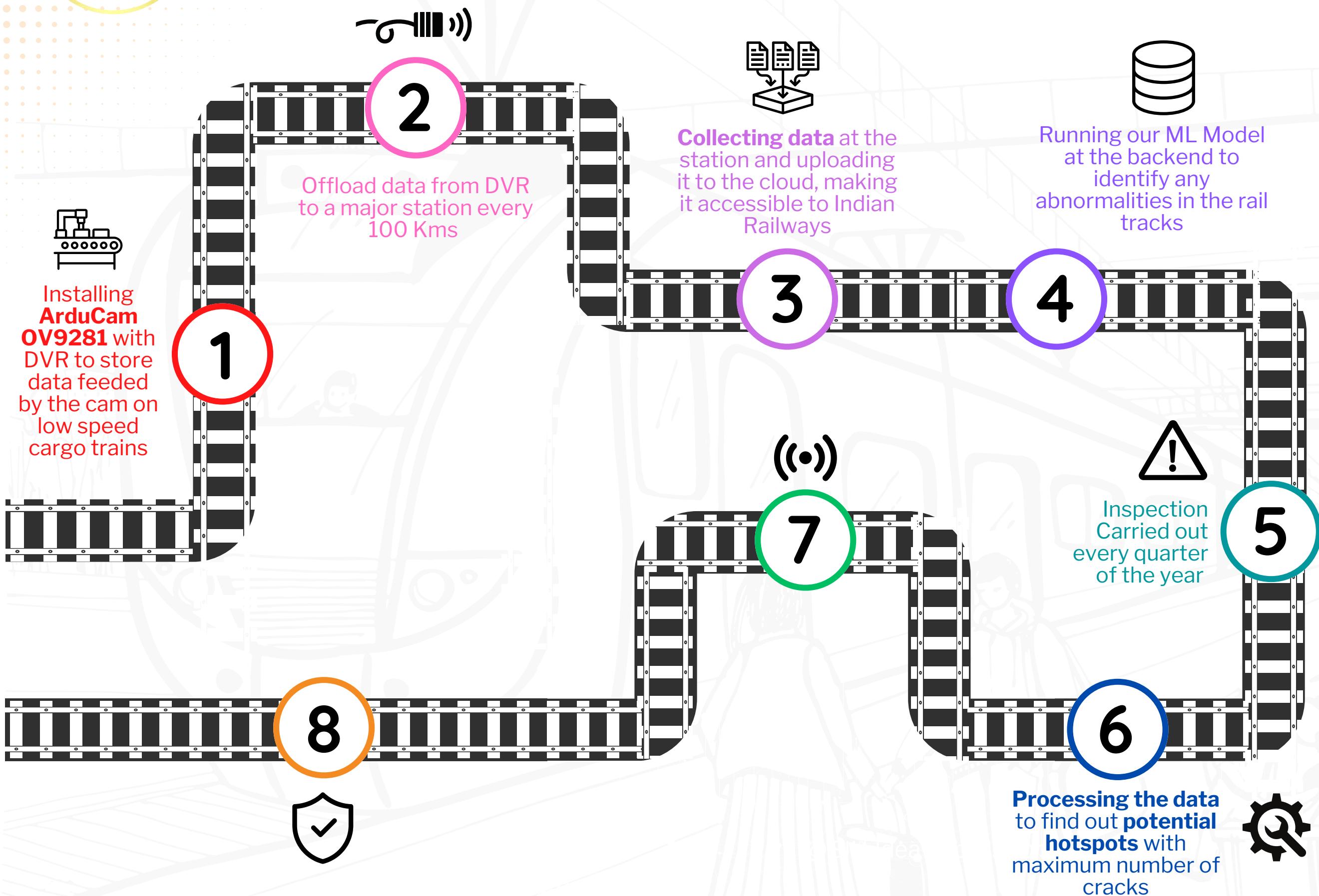
3 REAL-TIME RESPONSE
Instantly analyzes data to address critical track health and alert the authority



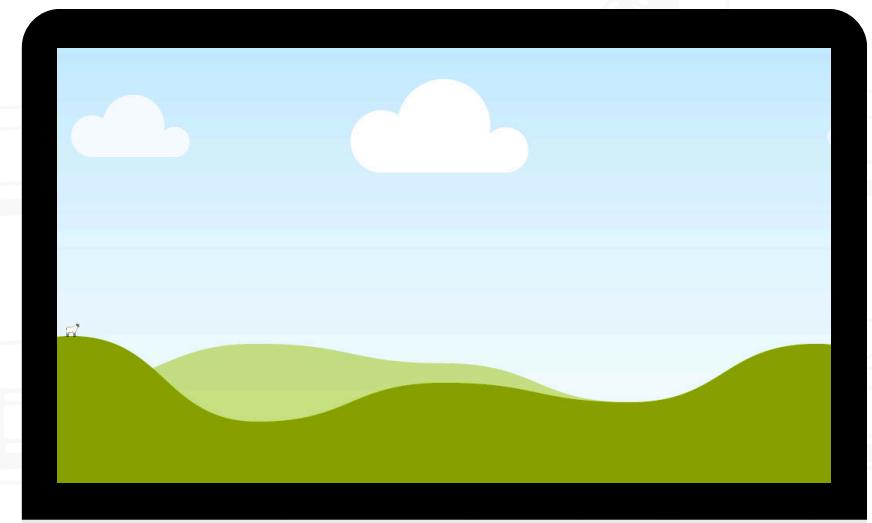
4 ADAPTABLE AND RELIABLE
Adjusts to various train conditions, maintaining top performance



WORKFLOW MAP



LANDING PAGE



TECH STACK





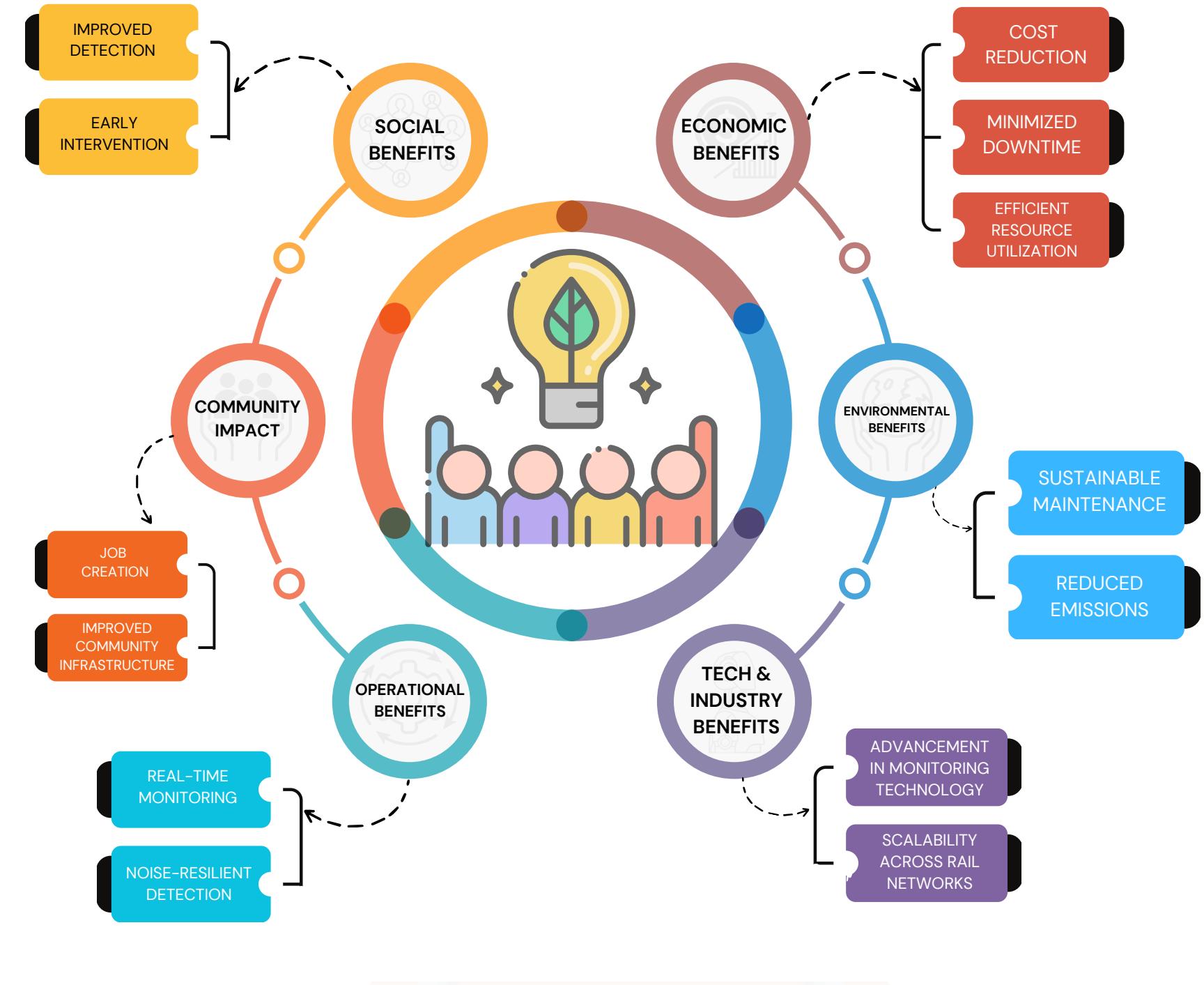
THE ROOM FOR CHANGE :



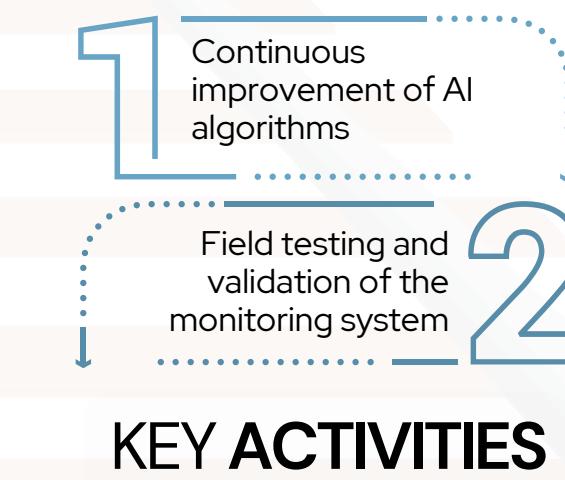
Approx 27% of Indian Railways **Expenditure** is on **Repairs and Maintenance** which can be significantly reduced using our solution



Train accidents in India remain a serious threat, with **638 incidents** between 2014 and 2023, resulting in **781 deaths and 1,543 injuries**. No amount of payout can bring back lives



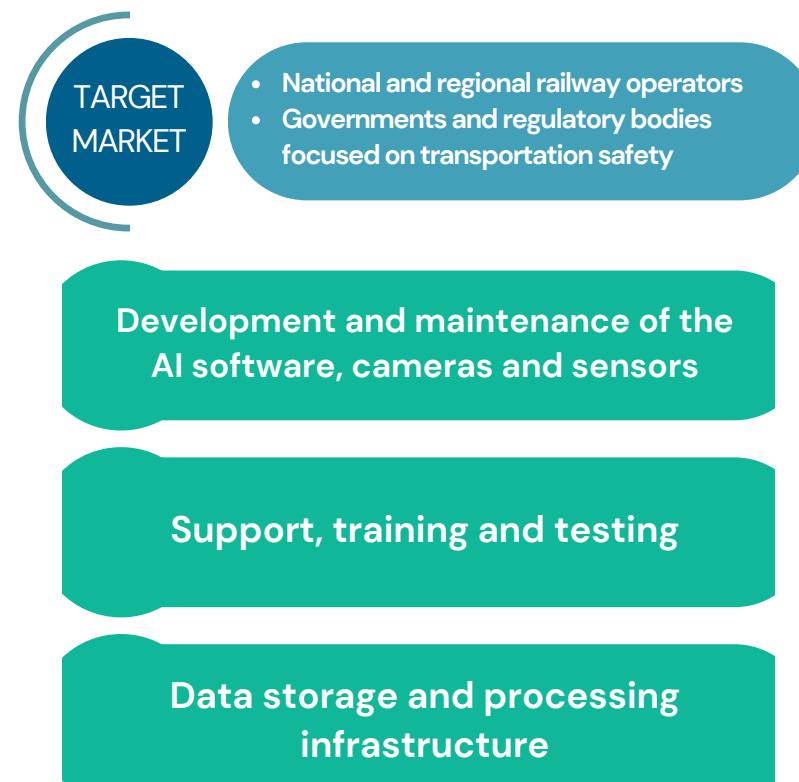
KEY PARTNERS



KEY ACTIVITIES



ANALYSING MARKET



COST STRUCTURE

TAM

Total Addressable Market

3,400 crore INR/year



RESEARCH AND REFERENCES



- <https://doi.org/10.3390/ai5020024>
- <https://www.newindianexpress.com/nation/2024/Aug/26/railway-accidents-decline-in-last-10-yrs-but-losses-mount-at-rs-300-crore-data>
- <https://images.google.com>
- <https://www.kaggle.com/datasets/salmaneunus/railway-track-fault-detection?resource=download>
- <https://www.ceicdata.com/en/india/railway-statistics-revenue-and-expenditure/expenditure-repairs-and-maintenance>