ANNUAL RAIL SAFETY CONFERENCE

"RAIL RENAISSANCE"

29 SEPTEMBER - 02 OCTOBER 2024

Hazendal, Stellenbosch, Western Cape

RSR RAILWAY SAFETY REGULATOR
RAIL SAFETY ON THE RIGHT TRACK

21 YEARS OF EXCELLENCE ON TRACK

Using Innovative Track Monitoring and Condition Diagnostics to Enhance Rail Safety Management in South Africa

Tian Kunneke
HisWay Labs (Pty) Ltd.

IMPROVING RAIL SAFETY SYSTEM AVAILABILITY THROUGH INNOVATION

Sub-theme 5: Evolution of Traditional Rail Safety Management Systems

TRACKVIEW

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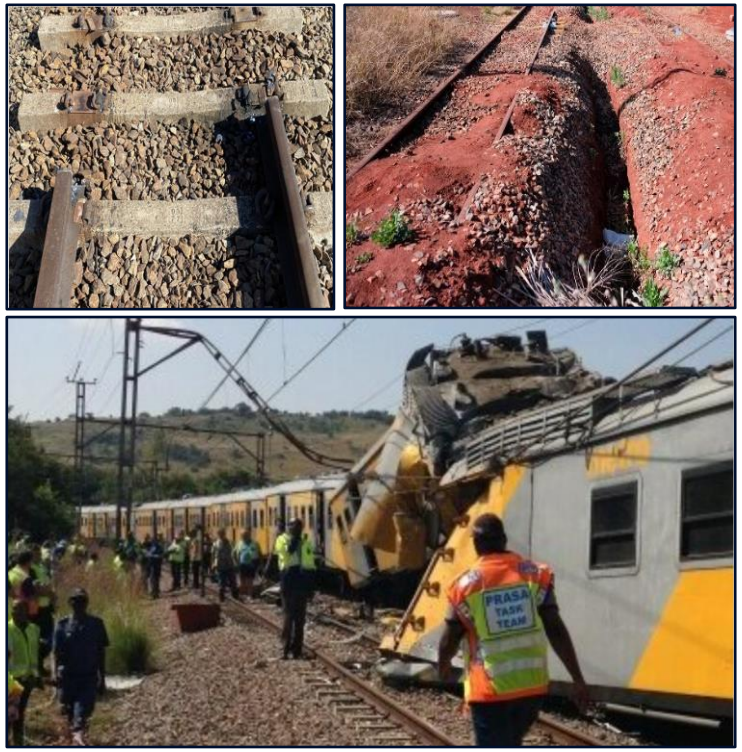
INTRODUCTION: THE WHY?

Why improve **Track Condition Monitoring** & **Train Detection** systems?

… to Reduce Risk, Save Lives, and Improve Reliability

- **Theft** & Vandalism
  - "3877 incidents of cable theft in 22/23 costing SA's economy close to R47-billion a year"
- **Loss** of Life
- **Economic** Impact
- **Operational** Inefficiency



*We need **AFRICAN solutions** to tackle uniquely **AFRICAN problems!***

THE CONTEXT: THE PROBLEM

What does the current technology address?

Loss in **Power Availability**

Loss in **Cable Availability**

THE CHALLENGE: A TECH SOLUTION

The Requirement

- Detect Trains
- Theft & Vandal Resistant
  - No Copper Cables, No Resale Value, Low power

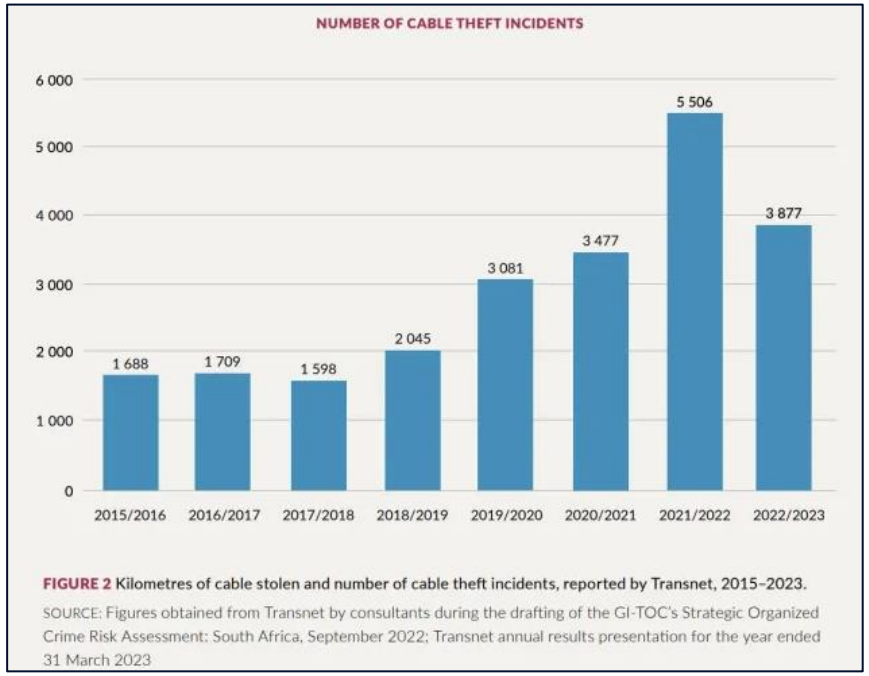


FIGURE 2 Kilometres of cable stolen and number of cable theft incidents, reported by Transnet, 2015–2023.

SOURCE: Figures obtained from Transnet by consultants during the drafting of the GI-TOC's Strategic Organized Crime Risk Assessment: South Africa, September 2022; Transnet annual results presentation for the year ended 31 March 2023

The Patented Solution

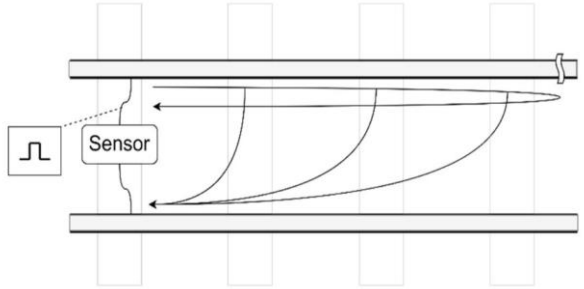


Figure 1. Contextualised illustration of the combined effect of TLCA and TDR for TrackView

- Broken rail detection (with location)
- Detects trains (with location)
- No resale value
- No Copper cables
- Low power
- Ballast Condition / Washouts / Weld Anomalies

THE TECHNOLOGY: PULSE RESPONSE

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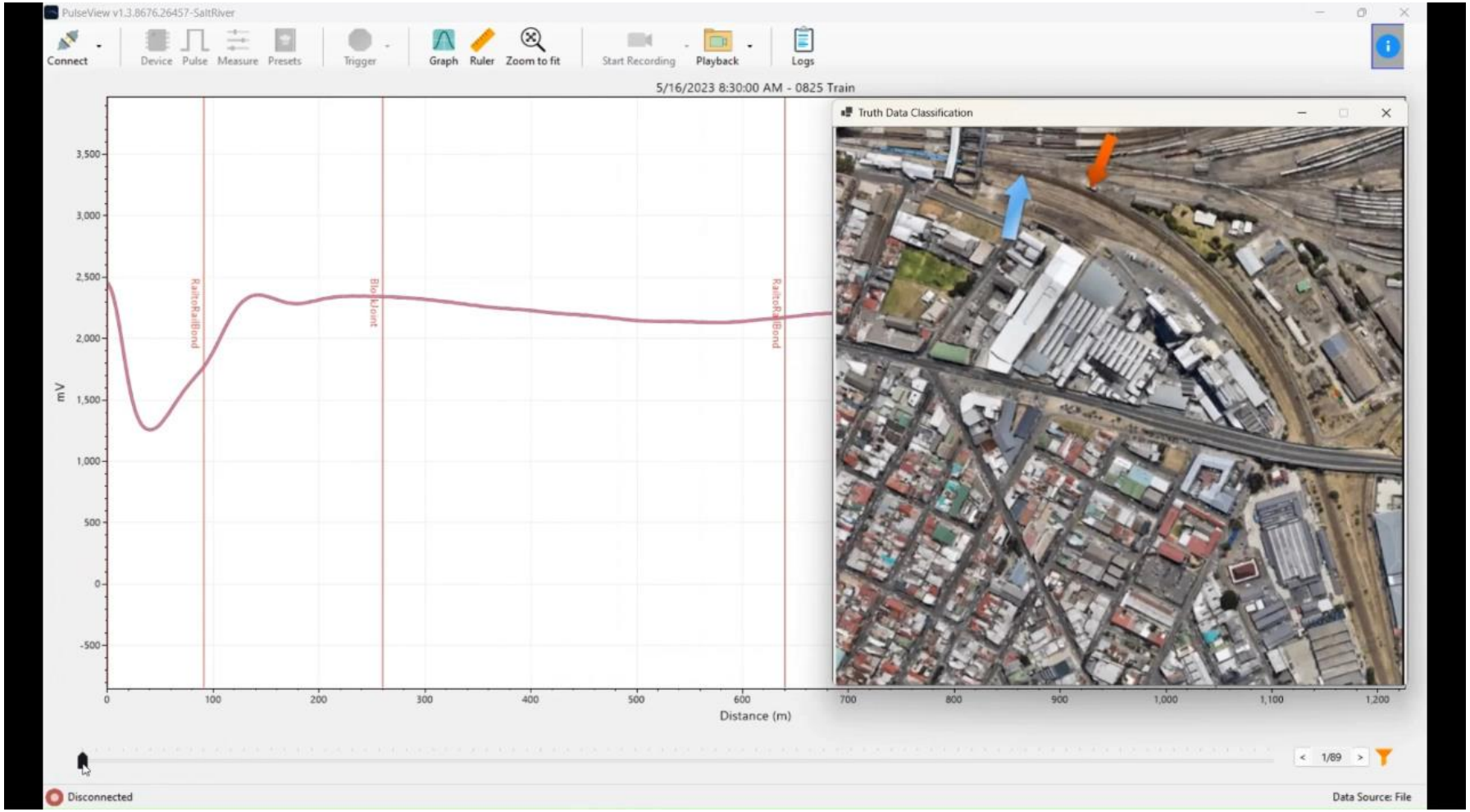
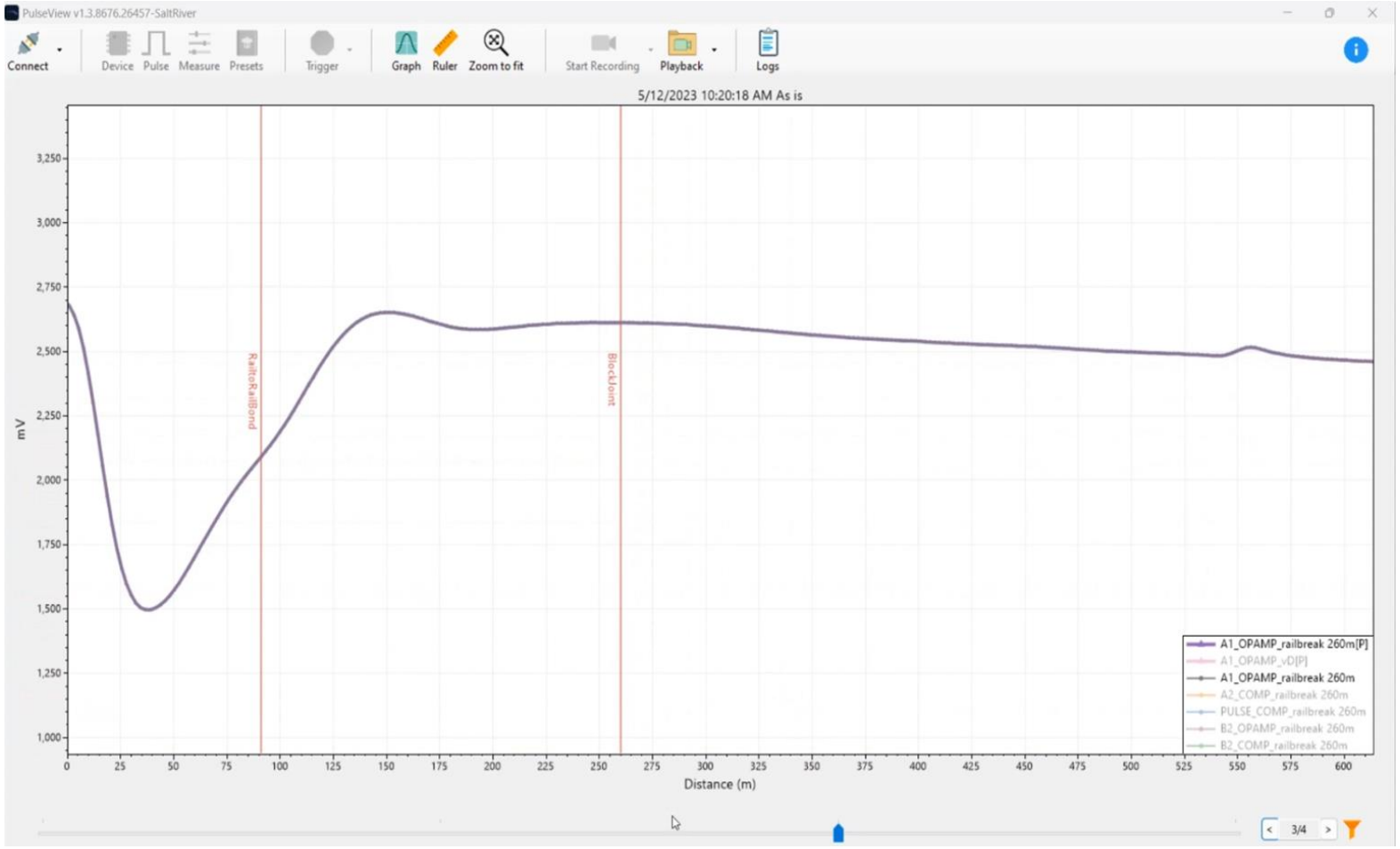


THE TECHNOLOGY: BASELINE

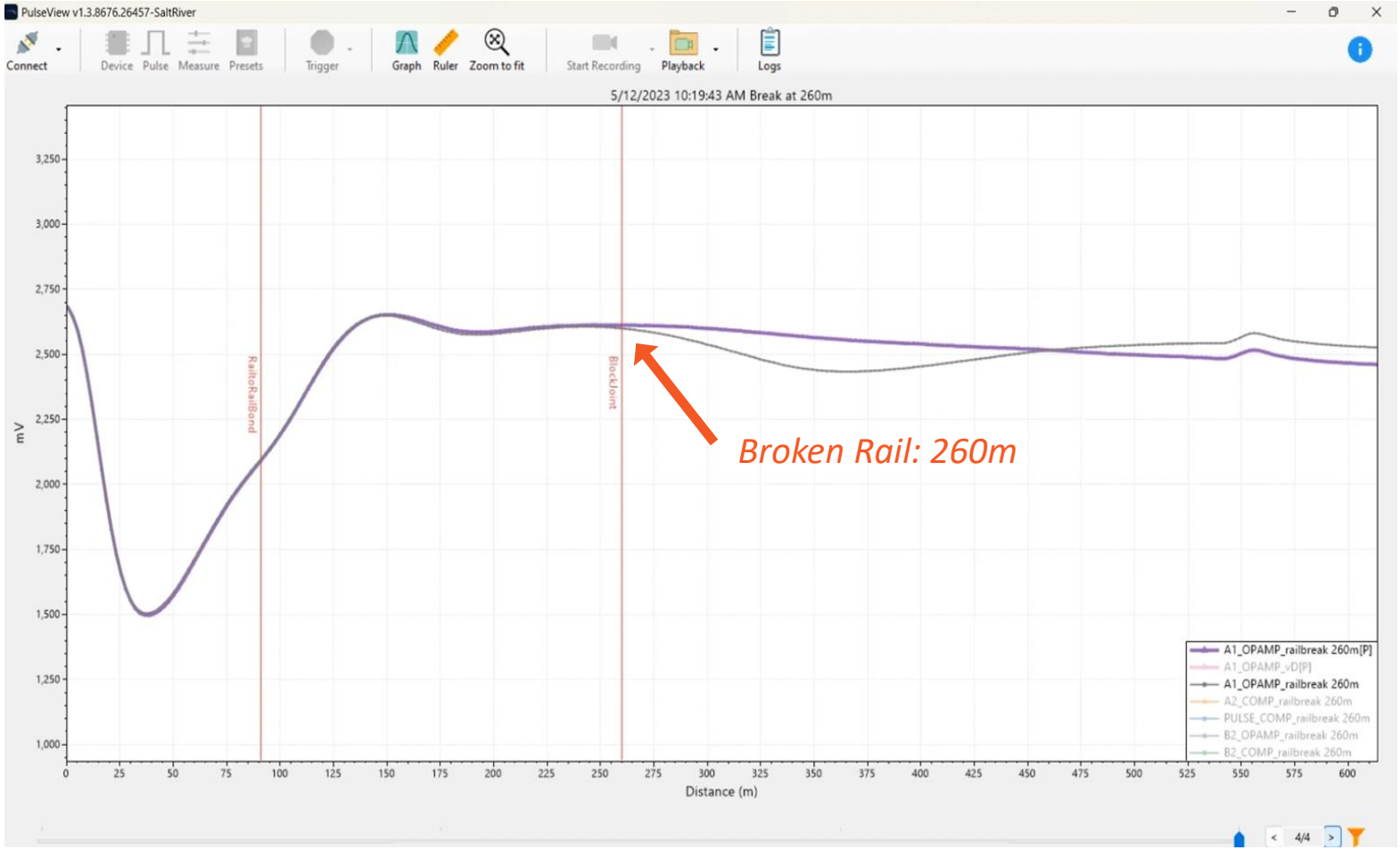


Legend

Rail A - Processed

Figure 1. Baseline measurement

THE TECHNOLOGY: BROKEN RAIL



Legend

- Baseline
- New Measure

Figure 2. Rail break causing deviation from baseline

THE TECHNOLOGY: COMPATIBILITY

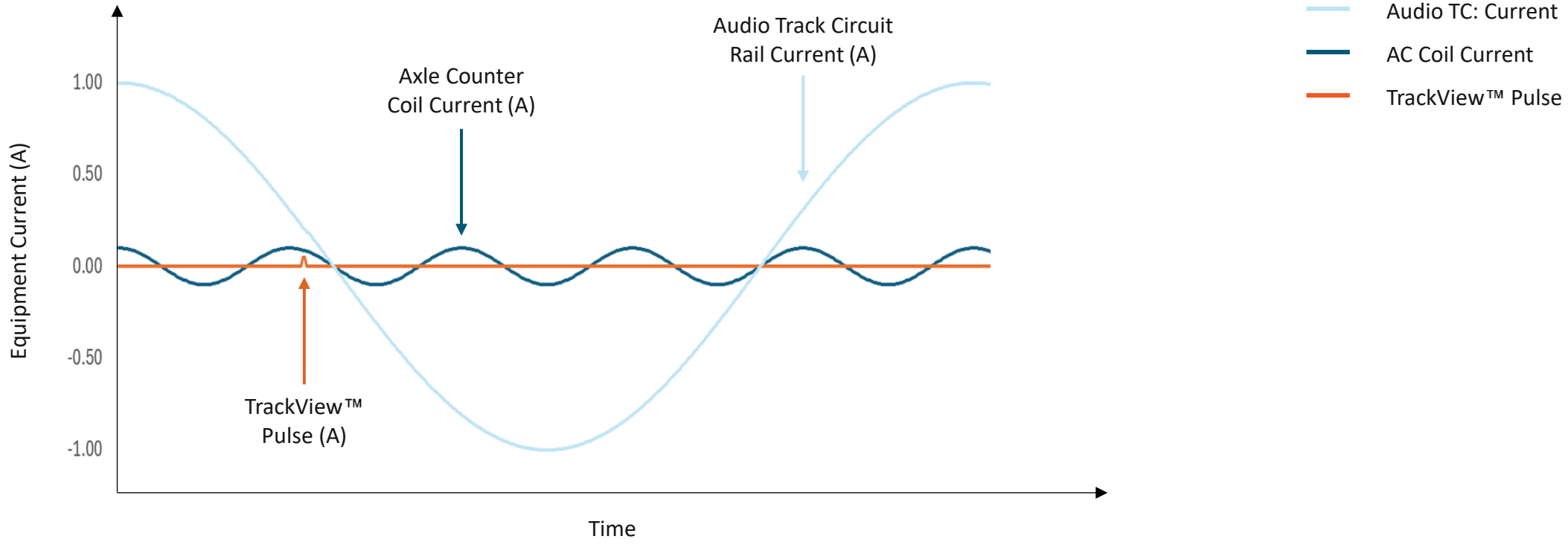


Figure 3. Current duration of various technologies on track

APPLICATIONS: CONDITION MONITORING

Track Condition Monitoring Systems

Broken Rails | Washout | Flooding | Ballast Conditions | Flat Wheels

BROKEN RAILS

“the leading cause of train derailments”

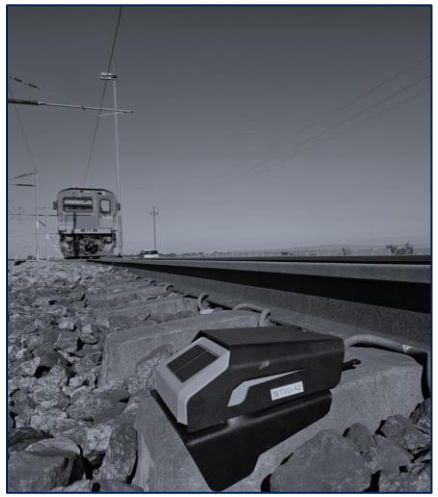
APPLICATIONS: TRAIN DETECTION

Train Detection & Integrity Systems

Train Position | Train Length | Average Speed | Ballast Conditions

FALL-BACK TRAIN CONFIRMATION SYSTEMS

"helping train controllers see during manual authorisations"



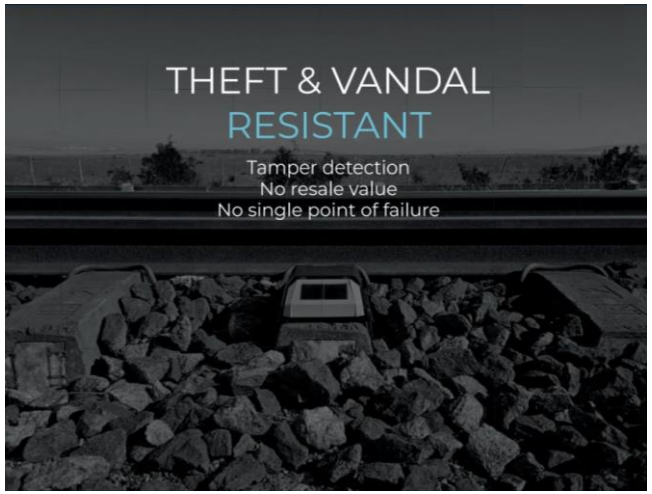
APPLICATIONS: LEVEL CROSSING

Train Detection & Alarm Systems

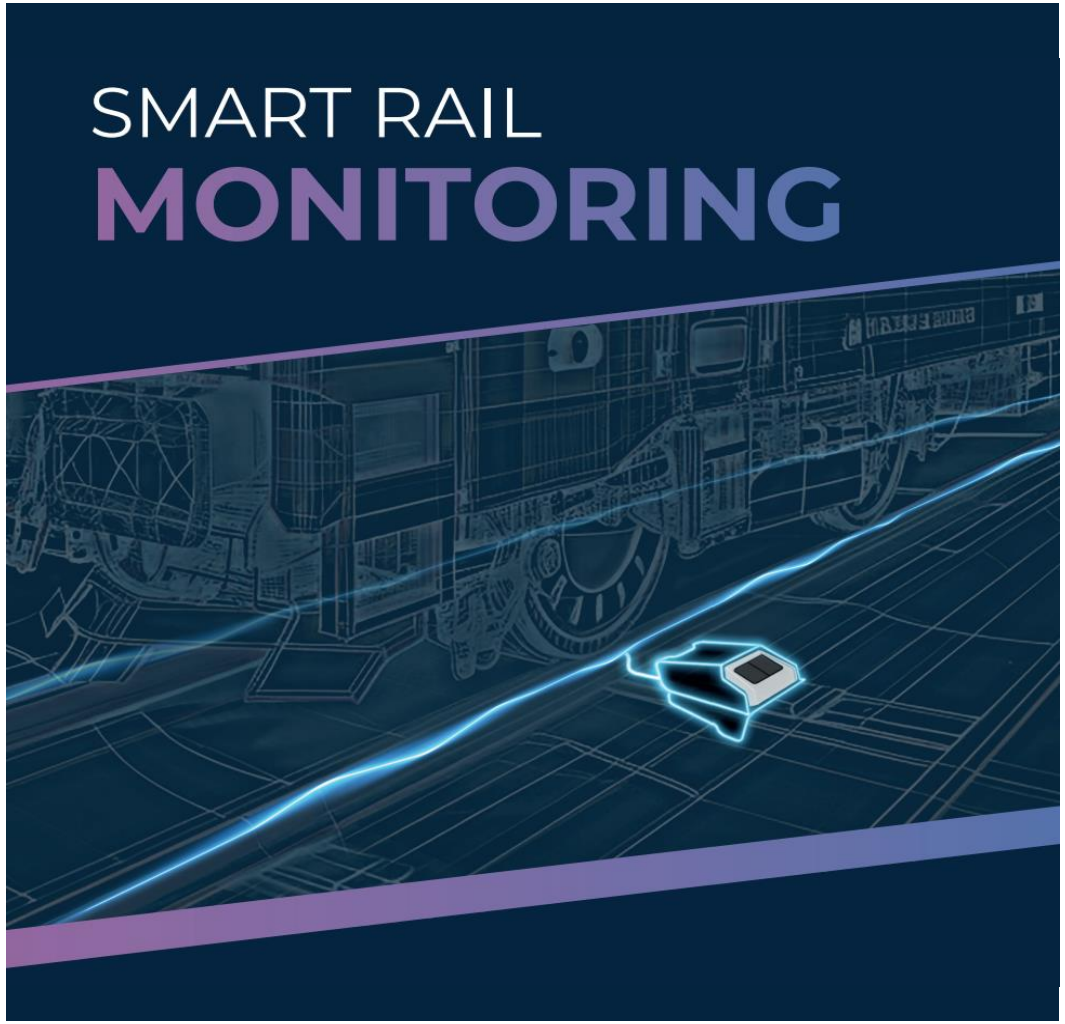
Train Detection | Signals & Sirens | Alarms & Warnings

30 SECOND WARNINGS CAN SAVE LIVES

"helping communities stay safe around railway tracks"



THE TECHNOLOGY: TRACKVIEW™



01 Rail Break Detection
- With location in near real-time
- Self powered

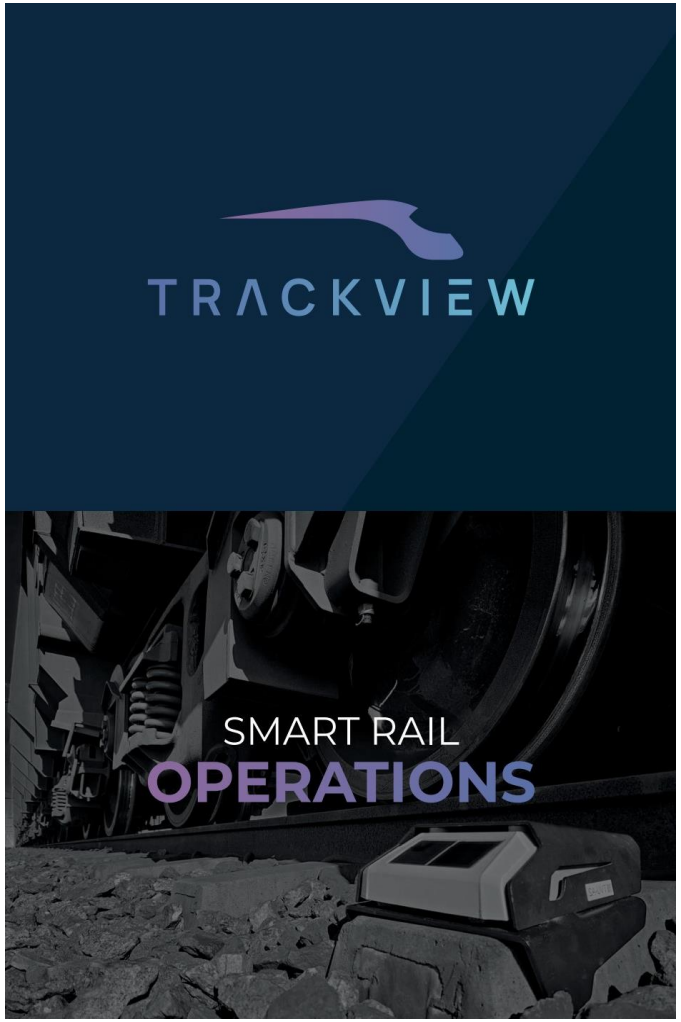
02 Vandal & Theft Resistant
- No resale value (no copper cables or batteries)
- Tamper detection with alarms & security dashboard

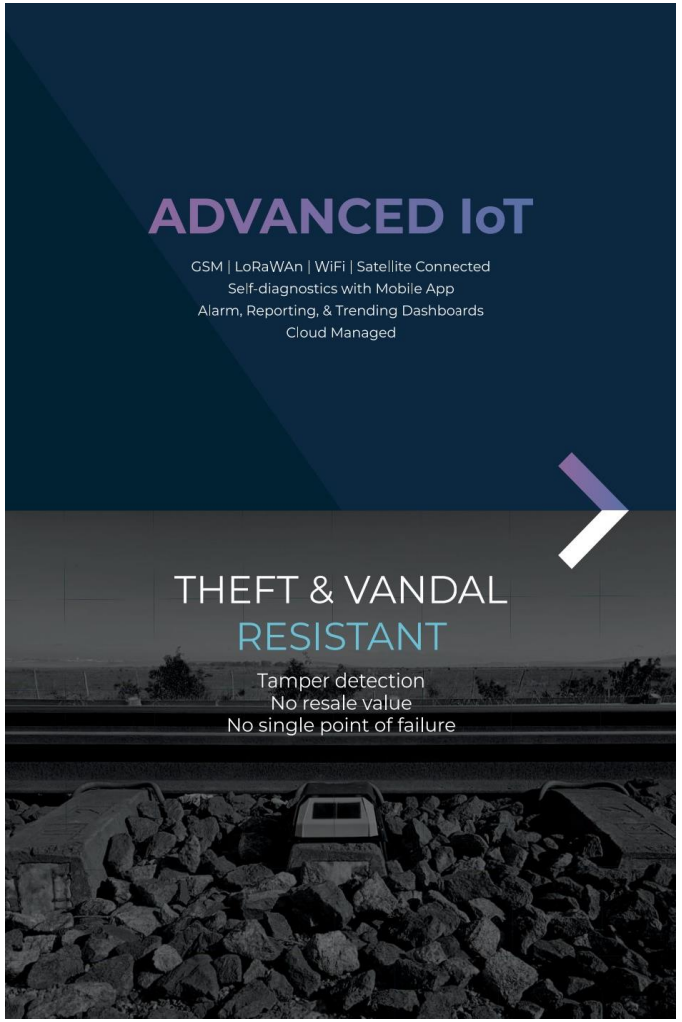
03 No System Disruption
- Rapid installation between trains
- Easy maintenance (rapid device swap out < 15 min)

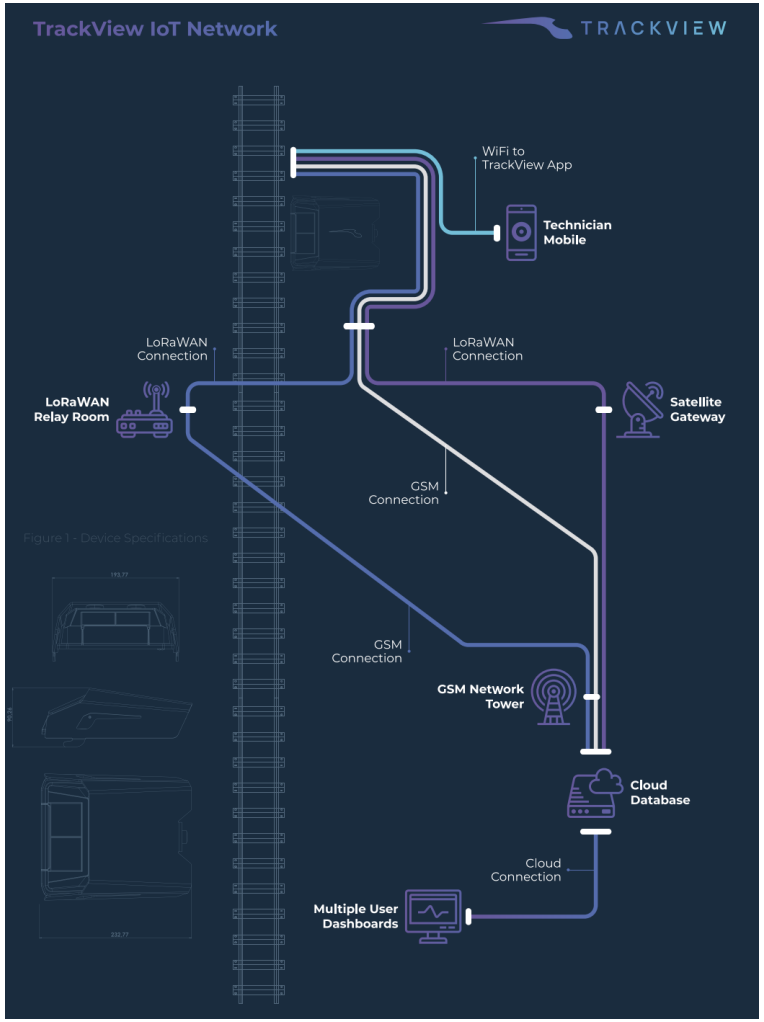
04 Train & Rail Condition Monitoring
- Train position & speed
- Flat-wheel, drag-wheel & flooding

05 Advanced IoT
- GSM / LoRaWAN / WiFi / Satellite Connection
- Cloud Managed
- Alarms, Reporting, & Trending Dashboards
- Device self-diagnostics with mobile app

THE TECHNOLOGY: TRACKVIEW™







THE TECHNOLOGY: TRACKVIEW™ ON TRACK

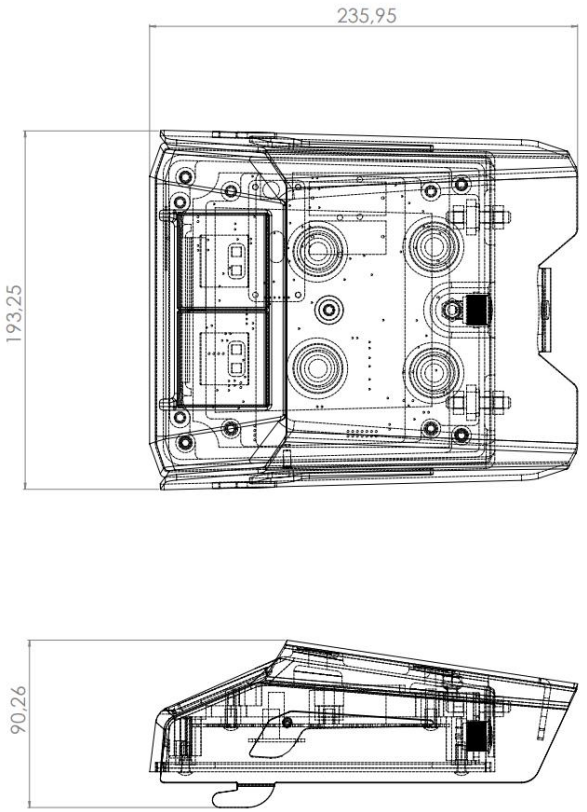


Figure 1. TrackView™ Dimensions (cm)

THE TEAM

Core Team

Franz Struwig
CEO
Founder

Tian Kunneke
Senior Rail Engineer
Founder

Danie Marais
Senior
Engineer

Phalo Mathungana
Software
Engineer

Christiaan Doubell
Development
Engineer

Kent Gibbon
Business & Product
Director

Partners

Dr. Bennie Steyn
Consultant

Prof. Hannes Grabe
Advisory Board
Member

Funded by

technology innovation
A G E N C Y
Innovating Tomorrow Together

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TRACKVIEW