ASECAP DAYS

MILANO 2024

Brisa
Autoestradas

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Incorporating Artificial Intelligent Solutions on Pavement Management Systems

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Agenda

- BRISA's Motorways in Operation
- Pavement Asset Management + Quality Control Report
- Can AI Help?
- AI Opportunities Within Inspections Methodology
  - Field Work
  - Information Access
- Data Output
- Future Steps
- Conclusions

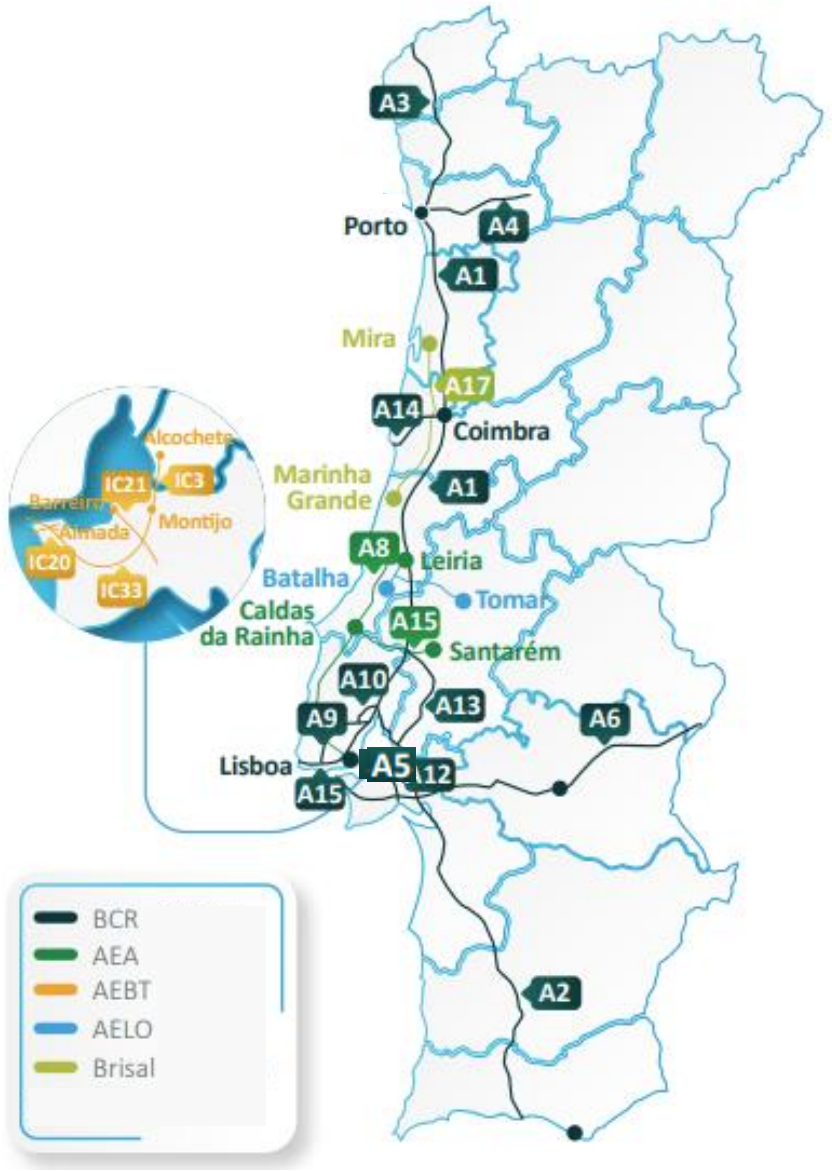
BRISA's Motorways in Operation

Brisa Autoestradas is a mobility operator with strong national and international experience in operating/managing road infrastructures since 1972

Management of motorway concessions and cross-cutting support services, including operation and maintenance, asset management and other engineering services

5 Concessions in Portugal

1 549 km Network Extension



Pavement Asset Management + Quality Control Report

Monotoring Pavement Surface:
(~550 km lane/year for inspection)

- Roughness
- Mean profile depth
- Skid resistance
- Rutting
- Surface distress → **cracking characterisation**

Can AI Help?

Road AI (Vaisala) is a tool that uses Artificial Intelligence (AI)

By:

- Images' **collection** (through a smartphone application)

It enables:

- Identification and classification, by type and severity, of **pavement surface distress**
- Pavement Condition Index (**PCI**)
- Easy visualization of the processed data

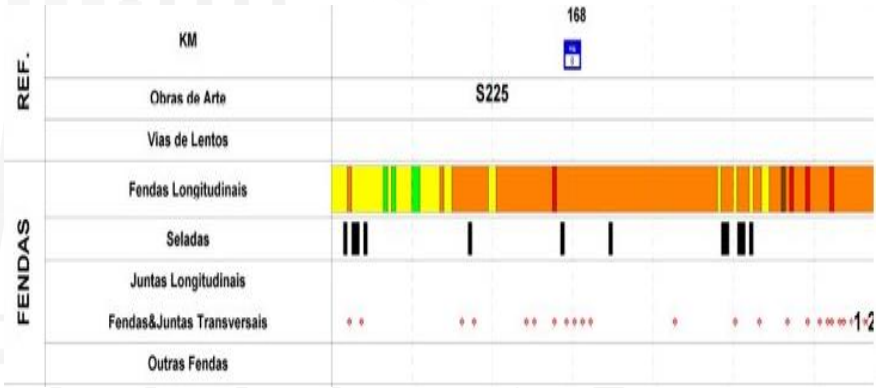
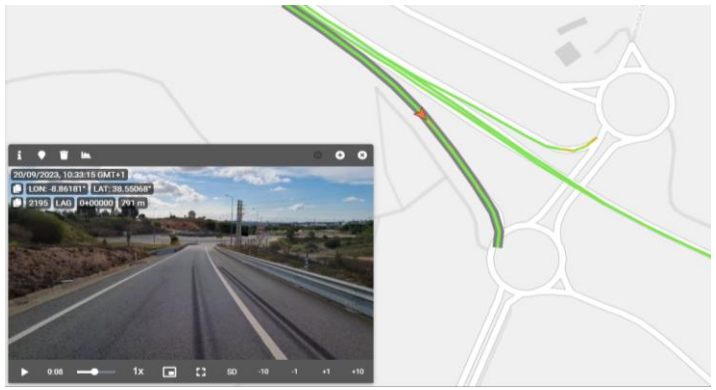
AI Opportunities Within Inspections Methodology

Field Work

	Visual Inspection	Road AI
		
Performance (per day):	40 km	200 km
Survey speed:	5 km/h (right shoulder)	75 km/h (right lane)
Surveyor:	Expert	Non-expert

AI Opportunities Within Inspections Methodology

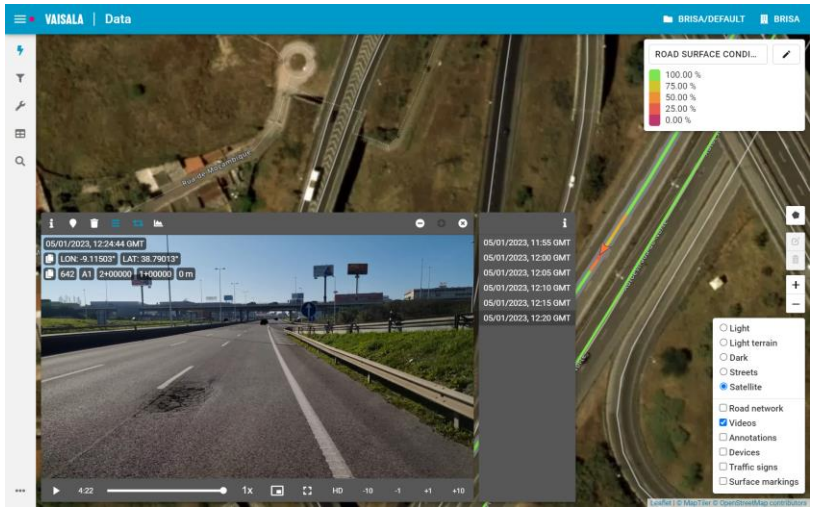
Information Access

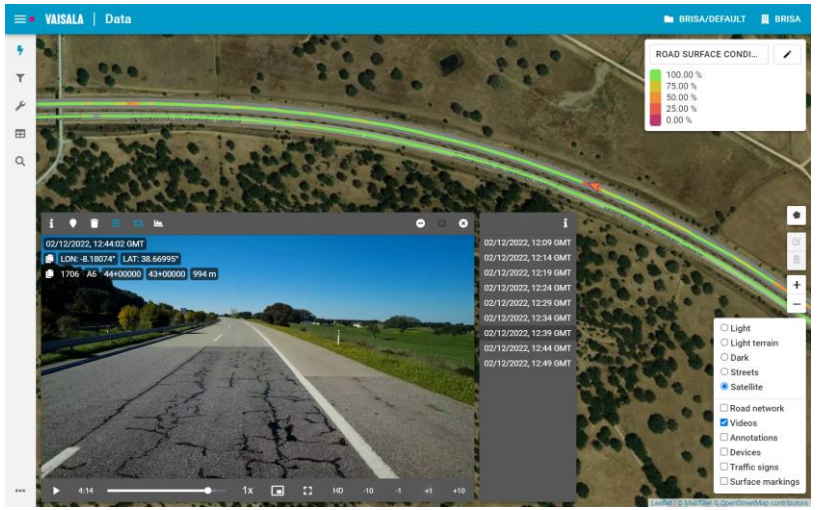
	Visual Inspection	Road AI
		
Availability:	2+ weeks	Immediate
Representation:	Graphic and linear	Graphic and geo-referred with images
Analysis:	Singular	Multiple

Data Output

Road AI **identifies and categorizes** different pavement surface distress

It’s possible to **analyse** either the final **PCI** score or individual pavement surface distress

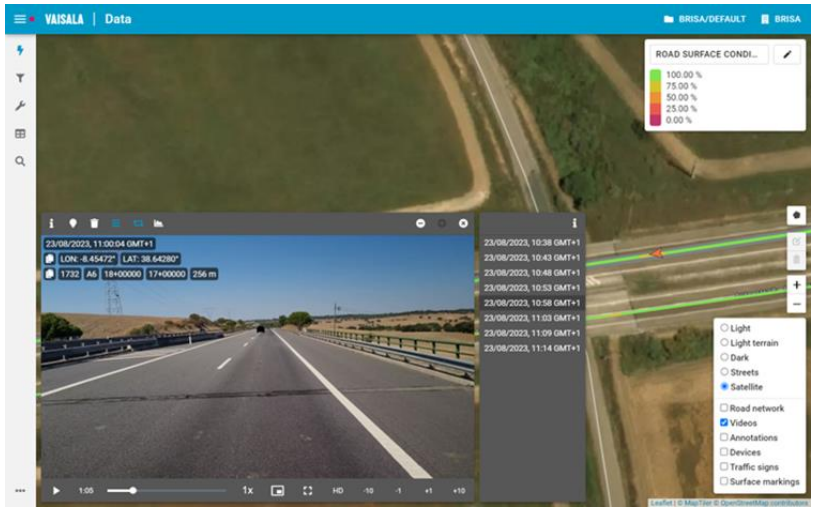




Data Output

Road AI identify/classify **incorrect surface pavement distress**, e.g.

- Grooves
- Manhole covers
- Joints

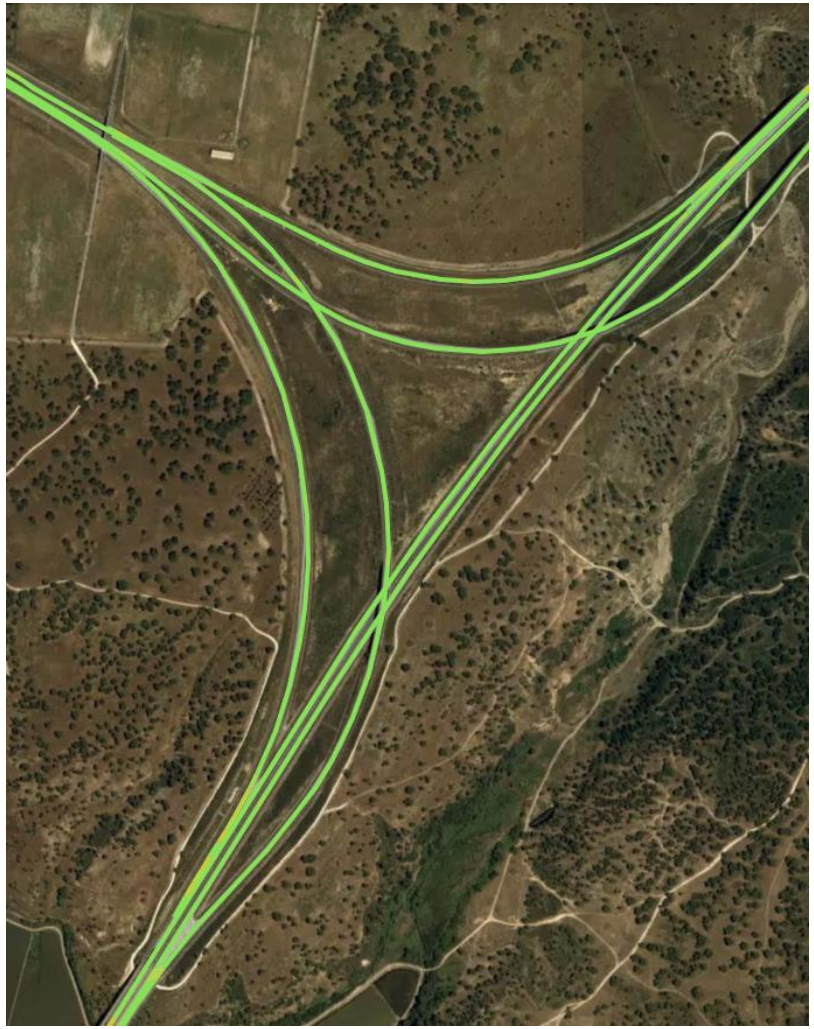


Future Steps

- Fulfil the **digital model** of the network (motorway and interchanges)
- **Mitigate false positives** occurrence
- **Automate the process of incorporating the output** data to the defined model report

Conclusions

- Tool with high **potential for pavements asset management**
- Allows **global view** of the **network** – carriageway and interchanges
- Allows future reinterpretation through **video archives**
- Improvement of the Information **quality will depend on the AI learning** from the images



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THANK YOU

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