ASECAP

Celebrating 50 YEARS of Successful TOLL ROAD PROJECTS

2nd ASECAP SUSTAINABILITY FORUM

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Celebrating 50 YEARS OF Successful TOLL ROAD PROJECTS

AI for highways asset management:

a construction materials digital platform supporting the 2050 carbon neutrality ambition

ORIS Materials Intelligence

HOSTED BY ASFINAG

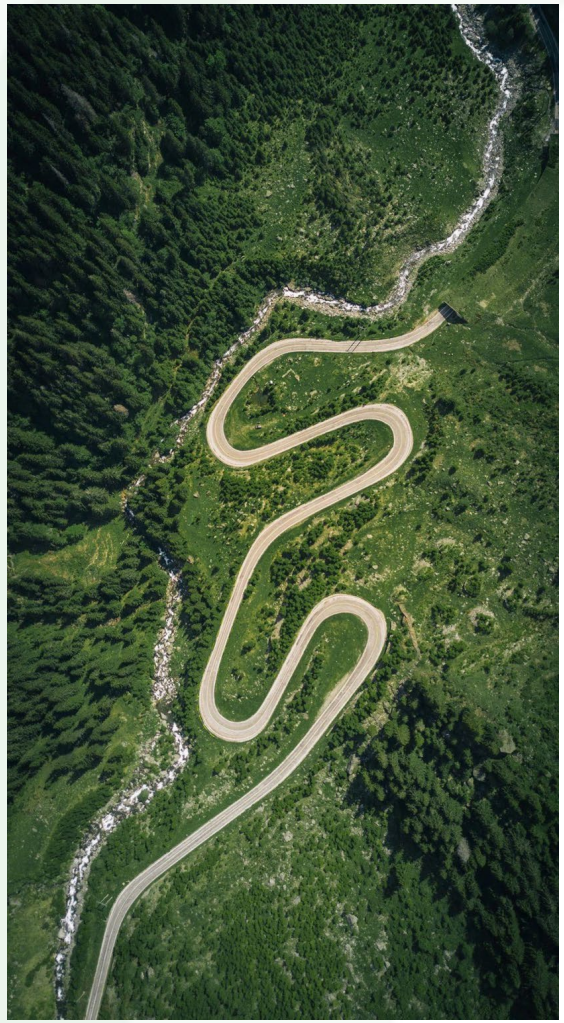
Mastering the Impact of Construction Materials

Construction materials

30 - 40% used in linear infrastructure

Impacting 60% of their cost

and 85% of their carbon emissions



Construction Industry

- ❏ lacks access to data knowledge on materials and on their impact
- ❏ has yet to leverage the full potential offered by digitalization
- ❏ needs to transform to integrate BIM

In the net zero journey for highways construction and maintenance, 40% of the reduction can already be achieved by using advanced digital tools!

ORIS:
The First Construction Materials Knowledge Platform

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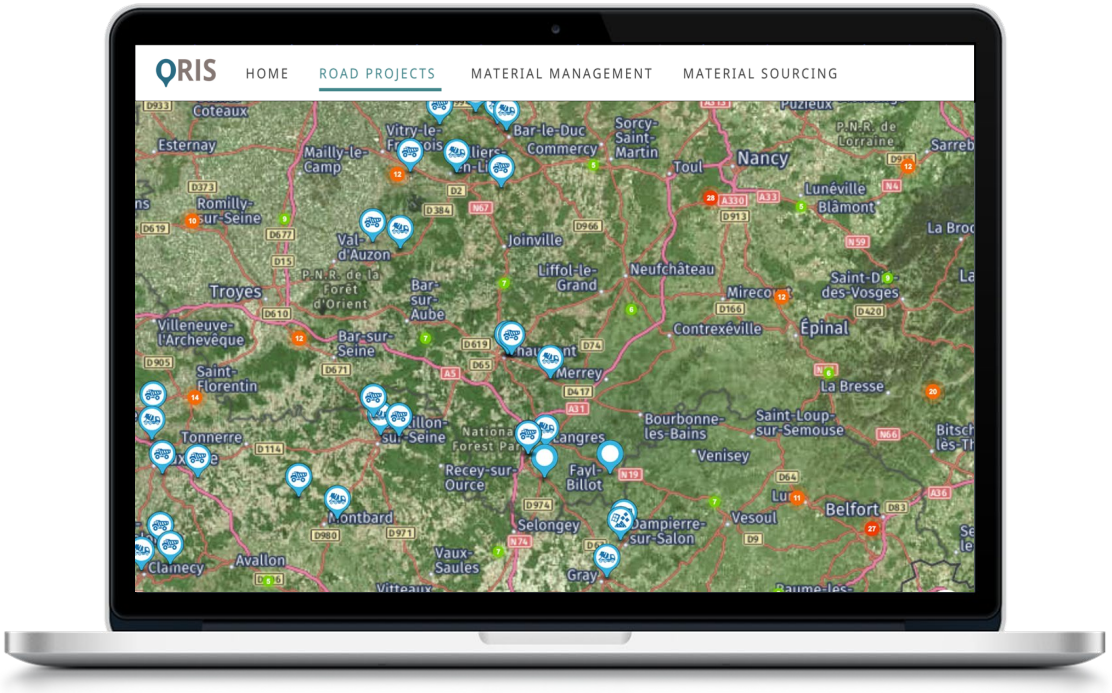
For a smart use of resources

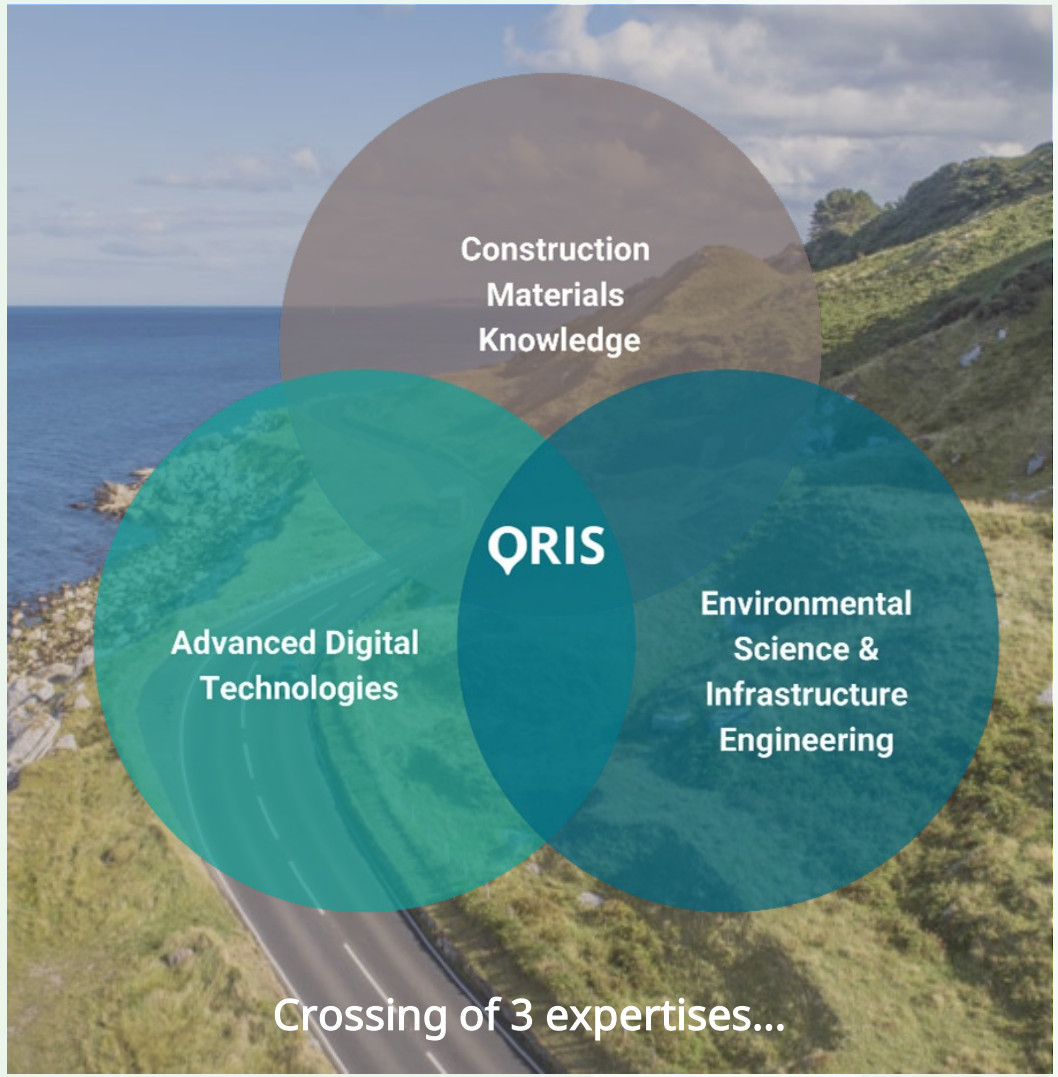
Focused on low impact linear transportation infrastructure

Connecting all players of infrastructure construction with materials data knowledge

Using Data Science and AI/ML



Digitization, Data Science and Cross Expertises to Resolve Multiple Challenges



... to bring a smart use of construction resources

Geolocation of local construction materials

Whole life cycle calculation of carbon impact from projects and construction materials

Decision dashboard for lower impacts:

- costs **by 15%-30%**
- carbon footprint by **up to 50%**
- maintenance needs by **up to 70%**
- use of natural resources by **up to 80%**

Identification of measures to improve **resilience to climate change and road safety**

Identification of **optimal construction materials transportation routes** in real time to lower costs and carbon footprint

Empowering the Value Chain to Deliver Low Impact Linear Transportation Infrastructure with Multi-Dimensional Analysis

Construction costs

-15 % average

Carbon decrease

+/- 50 % range

Safety standards

Accident predictions

Maintenance needs

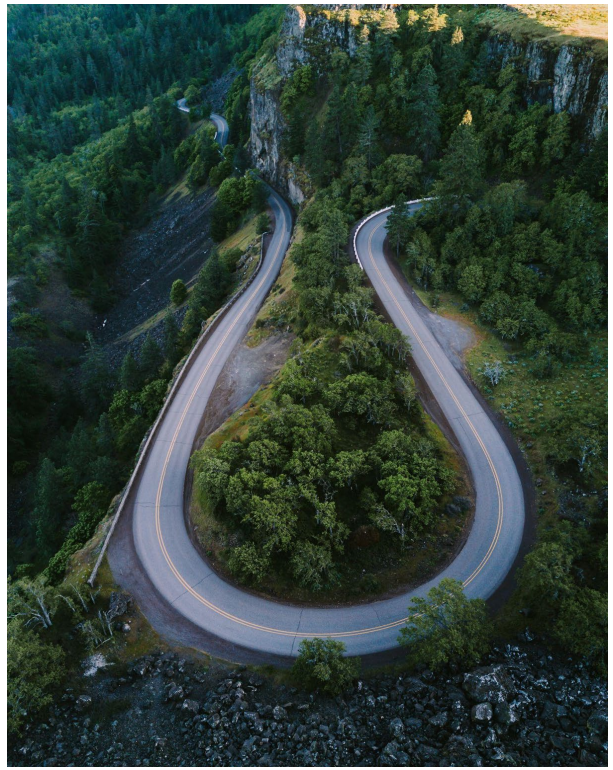
up to - 70 % decrease

Natural resources consumption

up to - 80%

Resilience & adaptation

Estimate the financial gap



A Deep Tech Innovation

QRIS

DATA SCIENCE

Collecting, cleaning and analyzing large datasets

Advanced skills in statistics, data visualization, and data management

ENGINEERING

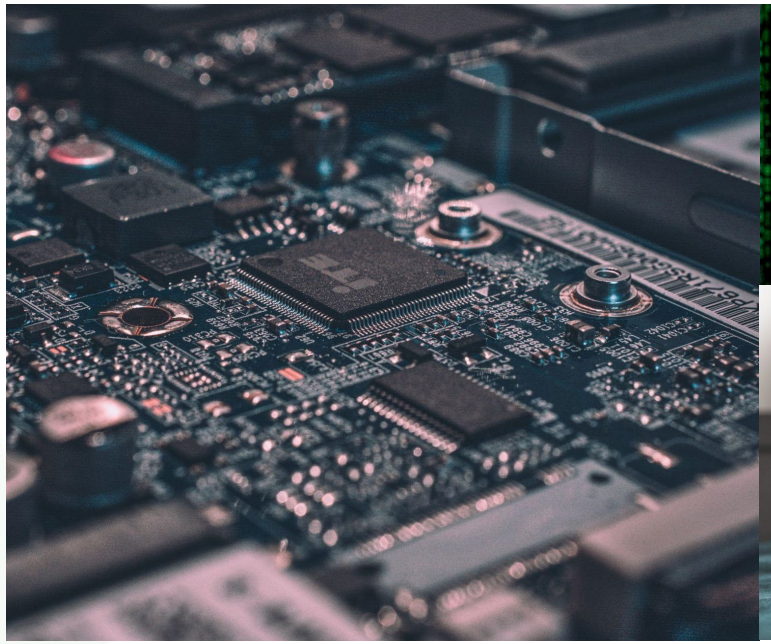
Deep understanding of materials science and structural engineering

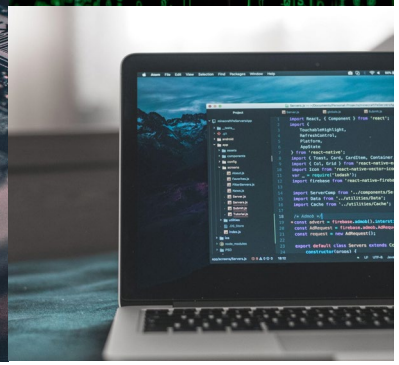
Use of advanced modelling and simulation tools to predict the performance of materials

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

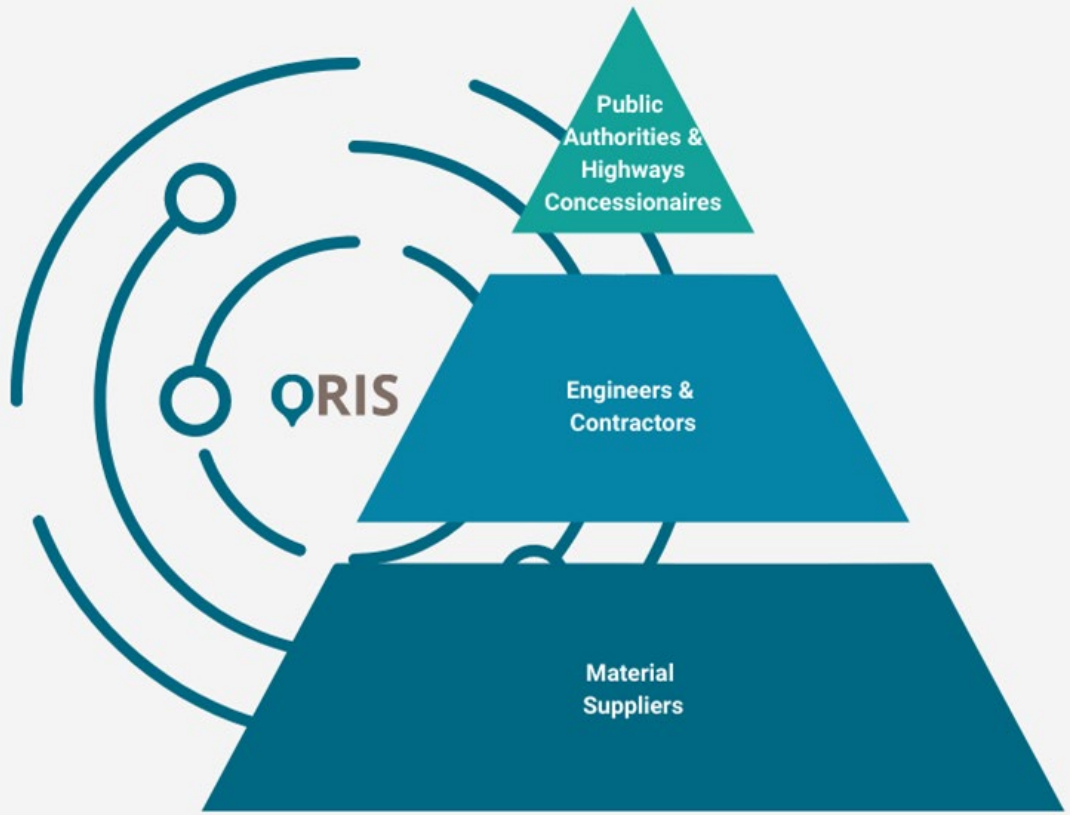
Expertise in programming, machine learning, and artificial intelligence to make predictions and recommendations based on the data and information collected by the platform

Combining advanced technologies - incl. data science, engineering, and AI/ML - which all require a high level of technical expertise and specialized knowledge





All Players have a Role within ORIS to Build Low Impact Infrastructure



RULES & REGULATIONS

Set the framework and direction
Share the ambitions in terms of environmental impact (low carbon, circular solutions, etc.)

PROJECT OPTIMIZATION IN SUPPORT OF REGULATION

Design optimization to meet national ambitions
Makes responsible early decisions

CONTRIBUTE TO A SUSTAINABLE USE OF RESOURCES

Share product capabilities
Showcase low carbon capabilities

ORIS contributes to project optimization at all stages of the value chain

Using ORIS for Highways Concessionnaires
1. Operate with Digital Twins for Smarter Asset Management

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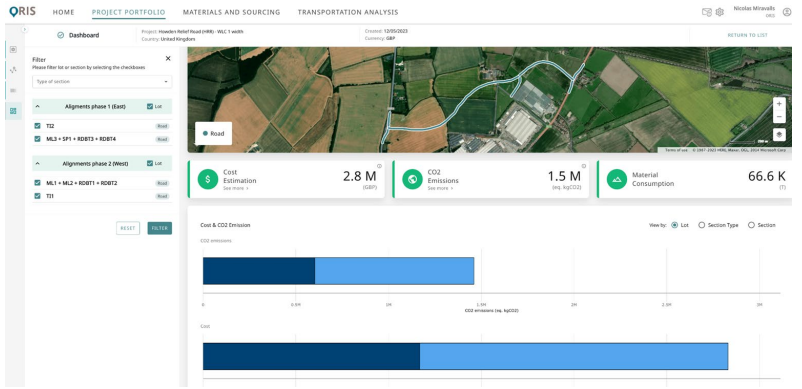
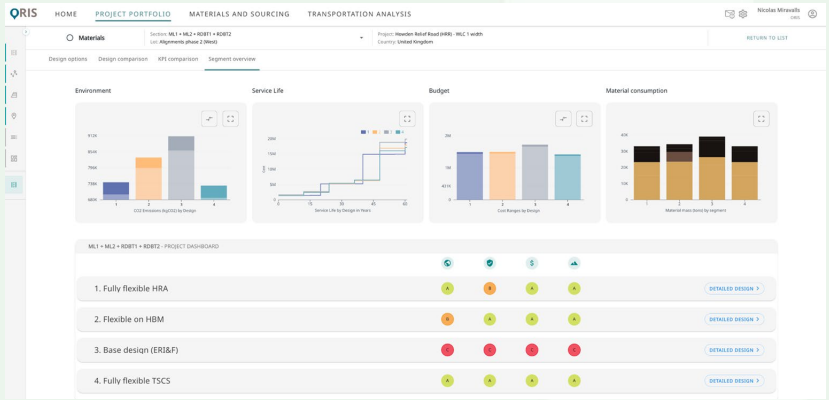
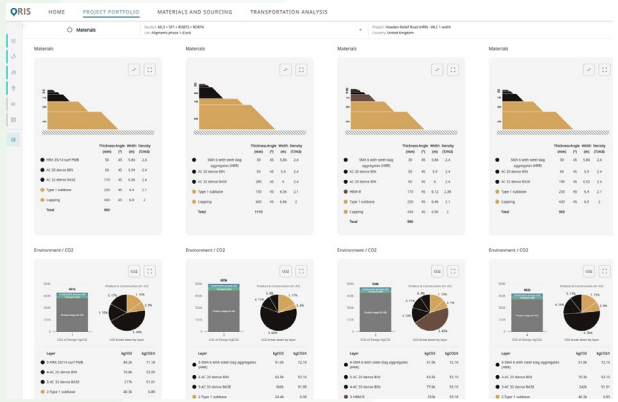
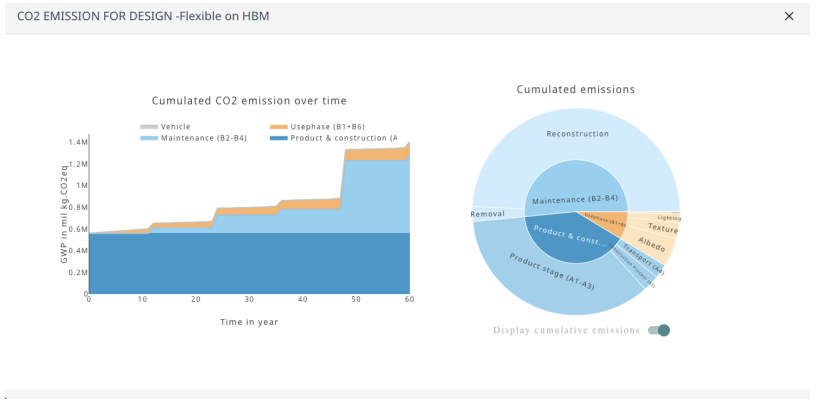
Simulate and run scenario for smart asset management of highways:

- ❑ Simulate Maintenance schemes
- ❑ Measure impacts (carbon, circularity..)
- ❑ Improve safety scenarios









Using ORIS for Highways Concessionnaires
2. Measure your scope 3 emissions

Systematize standard scope 3 emissions measurement using international norms

Establish your baseline and identify levers of reduction, based on construction and maintenance scenario

Example with Autobahn Germany

- ❏ Large portfolio - 13,000 km of highways and 6,000 projects/year
- ❏ No existing tools to measure scope 3 emissions of projects (new or maintenance)
- ❏ Collaboration with ORIS on 3 pilot projects beginning of 2023 to measure scope 3 emissions
- ❏ Next steps:
  - systematize the approach with a common method
  - have a scope 3 baseline for the network
  - reduce the carbon impact using AI & simulation

Using ORIS for Highways Concessionnaires
3. Ensure asset alignment with taxonomy requirements

Identify sourcing options that fit the EU taxonomy requirements and that are aligned with the Paris Agreement

Automate assessment to report on complex indicators

Example of EU Taxonomy Criteria that can be dealt using ORIS

Road maintenance for circular economy taxonomy criteria

- ❏ Of the main road elements demolished or removed, 100% is prepared for re-use or recycling
- ❏ Where road elements are newly installed 50% are re-used or recycled materials
- ❏ Re-used or recycled materials are not moved over distances greater than 2.5 times the distance between the construction site and the nearest production facility
- ❏ Binder course has a service lifetime no shorter than 20 years

This requires a lot of efforts and digitalization can fast track and automate the process

Timeline for application: starting 2024!

20+ Trusted Partners and Customers

SECAP — Celebrating 5 YEARS OF Successful TOLL ROAD PROJECTS

IBM · ARKANCE SYSTEMS · UNIDO · iRAP ACCREDITED · ADB · aws · AUTODESK · AECOM · IRF · here · TURUN TUNNIN JUNA · HOLCIM · SWECO

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Awards

CIHT AWARDS 2022 WINNER CIHT International Infrastructure Award

WDBE 2022 WORLD OF DIGITAL BUILT ENVIRONMENT — Top 3 in the Most Impactful Digital Act for Sustainability

National Highways Industry Awards 2020|2021 — national highways

AWARDS Highways 2021 — Winner of the Environmental Sustainability in Highways Award; Winner of the Judges' Special Merit Award

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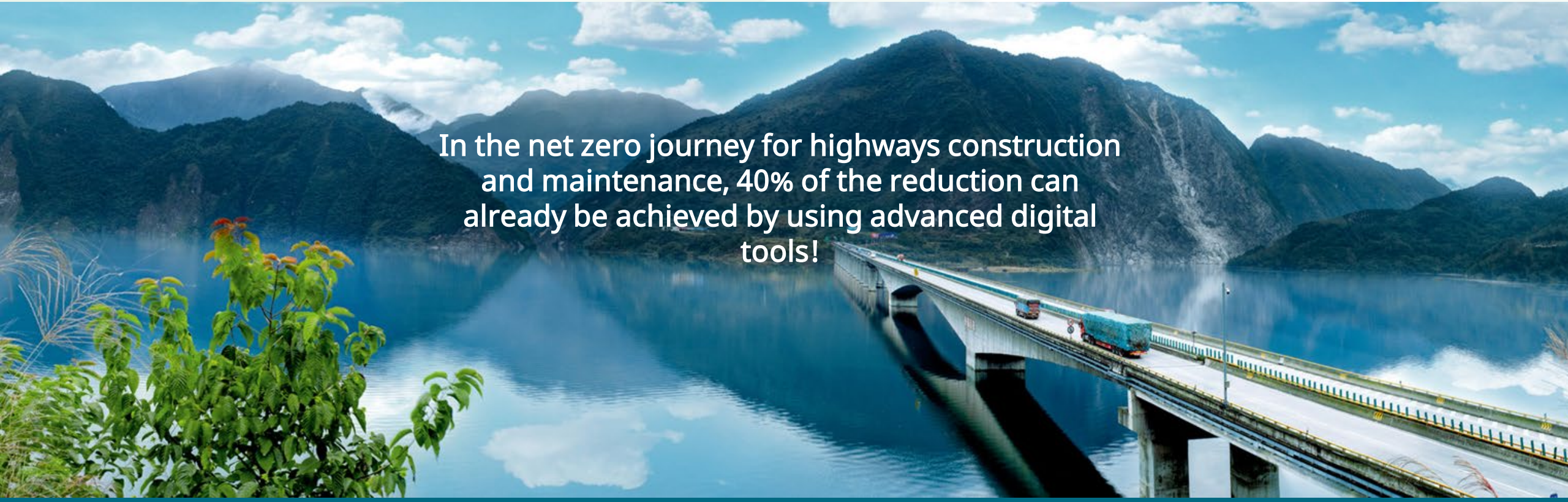

ORIS Materials Intelligence

Learn more:

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