CASE STUDY

The Hidden Asset

How Cross-Correlated Data Can Unlock €4.8M in Annual Value from Mining Haul Truck Tires

Executive Summary

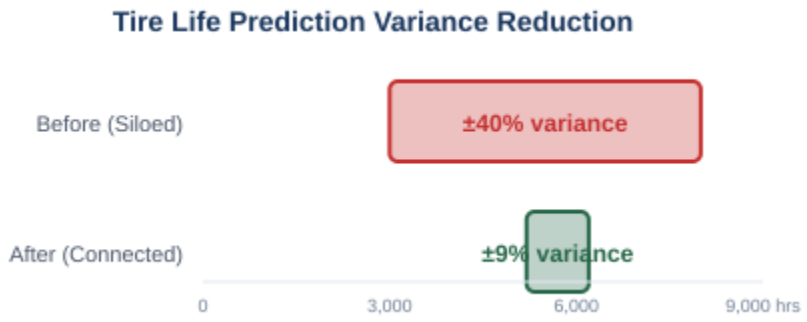
A mid-sized copper mine operates €15.2M worth of haul truck tires at any moment. Current replacement decisions are made with ±40% uncertainty on remaining useful life. Through cross-correlation of six existing but siloed data streams, we identified €4.8M in recoverable annual value—without any new sensors, systems, or capital expenditure.

€15.2M	±40%	€4.8M	€185K
Tire Asset Value	**Current Variance**	**Recoverable Value**	**Downtime Cost**
60 trucks × 6 tires	3,000–8,000 hours	Annual savings	Per truck per day

The Challenge

Ultra-class haul truck tires represent one of the largest consumable costs in open-pit mining. Each tire stands over 4 metres tall, weighs 5,300kg, and costs approximately €46,000 to replace. A single truck carries six of them.

The problem: tire life varies wildly—from 3,000 to 8,000 operating hours—depending on load profiles, route grades, ambient temperatures, driver behaviour, and road maintenance. This creates a costly decision dilemma.



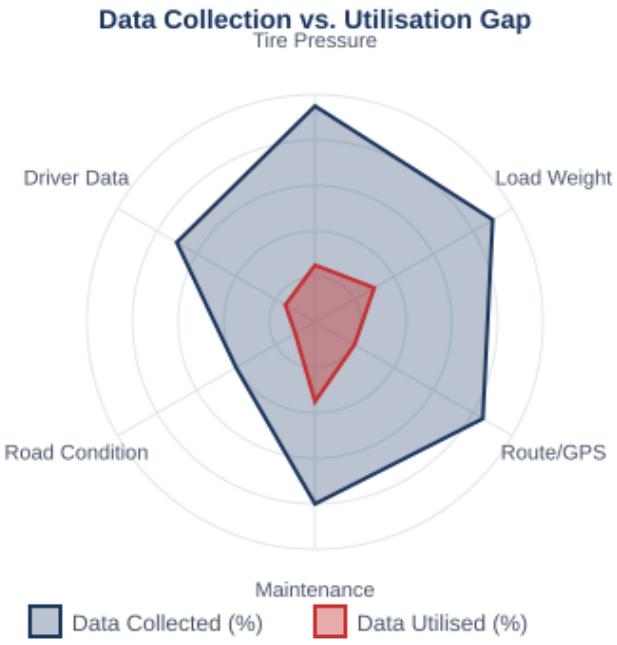
The Discovery: Data Exists, Connections Don't

Our diagnostic revealed something striking: mines already collect all the data needed to predict tire life accurately. But each data stream often lives in its own silo, owned by a different team, and is seldom cross-referenced.

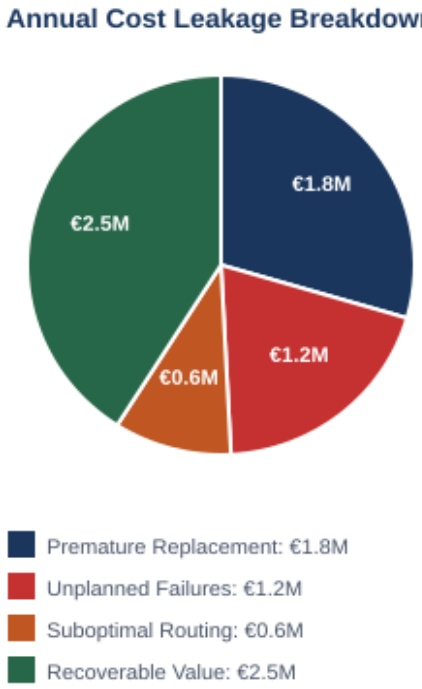
Data Source	Collected?	Used?	Potential Application
Tire Pressure Sensors	Yes	Alerts only	Predict casing fatigue patterns
Load Weight per Haul	Yes	Reports only	Correlate stress per tire-hour
Route/Grade GPS	Yes	Dispatch only	Map wear patterns to terrain
Maintenance Logs	Yes	Separate system	Link repairs to conditions
Road Condition Surveys	Partial	Paper records	Predict damage likelihood
Driver Behaviour Data	Yes	Safety only	Correlate behaviour to wear

The Data Gap Visualised

The radar chart below shows the stark gap between data collection (outer blue area) and actual utilisation (inner red area). Every data source needed for accurate tire life prediction exists—yet most remain untapped for this purpose.

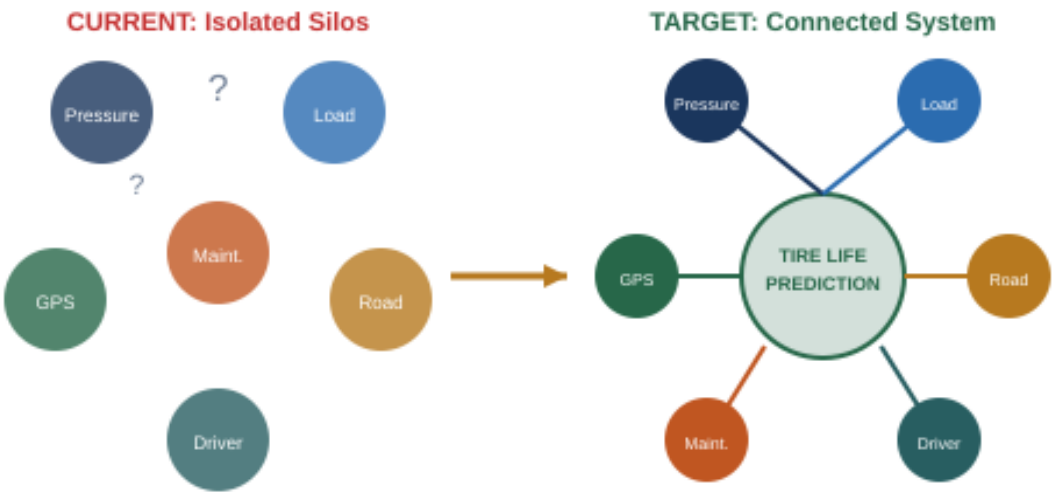


The cost leakage breaks down into four categories, with €2.5M directly recoverable through better prediction. The green segment represents value that can be captured without capital expenditure.



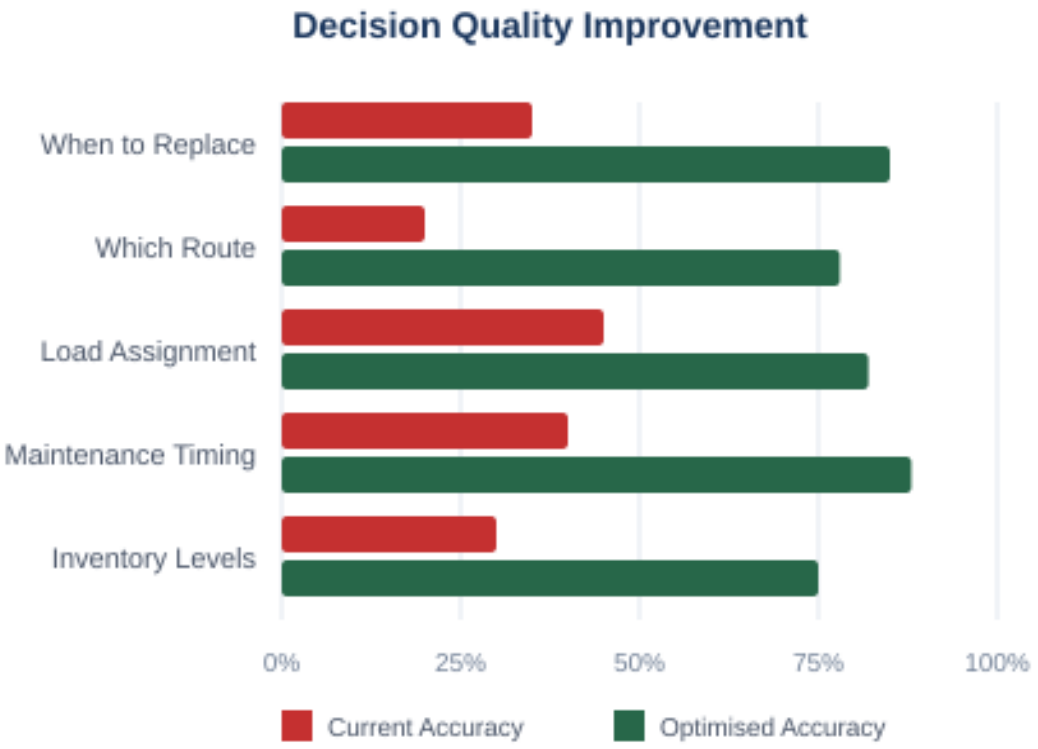
From Silos to System

The transformation requires no new technology—only new connections. Each data source is linked to an individual tire profile, creating a complete stress history that enables accurate lifecycle prediction.

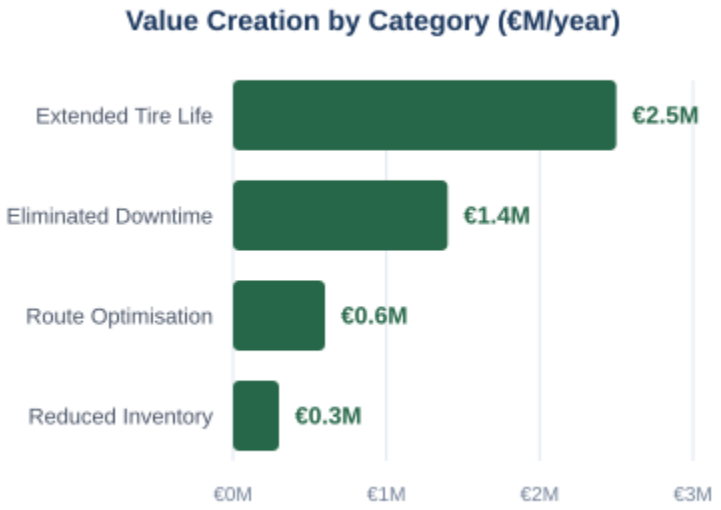


Impact on Decision Quality

Cross-correlated data transforms decision accuracy across multiple operational domains:



Value Creation: €4.8M Annual Recovery



Value Stream	Annual €	Mechanism
Extended Tire Life	**€2.5M**	Run tires 15% longer on average
Eliminated Unplanned Downtime	**€1.4M**	Predictive replacement prevents 8 failures/year
Optimised Routing	**€0.6M**	Match worn tires to easier routes
Reduced Inventory	**€0.3M**	Lower safety stock with confident prediction
Total Annual Value	**€4.8M**	No capital expenditure required

The Broader Pattern

This case illustrates a pattern we see repeatedly in heavy industry:

1. **Data collection has outpaced data connection.** Most operations have sensors generating vast amounts of information. Very few have connected that information across functional silos.
2. **The analyst bottleneck prevented integration.** Cross-correlating data historically required specialised skills and long project timelines.
3. **AI has collapsed that bottleneck.** What once required a team of analysts over months can now be done in hours/days.

4. **The value was always there.** It was stranded by friction, not by absence. Removing the friction releases the value.

The Question for Your Operation

What high-variance assets do you have on the ground—where the data to reduce that variance already exists, but sits unconnected?