



ProvisionAI

A Costly Mistake

Missing **Load Planning Optimization** in Digital Transformations

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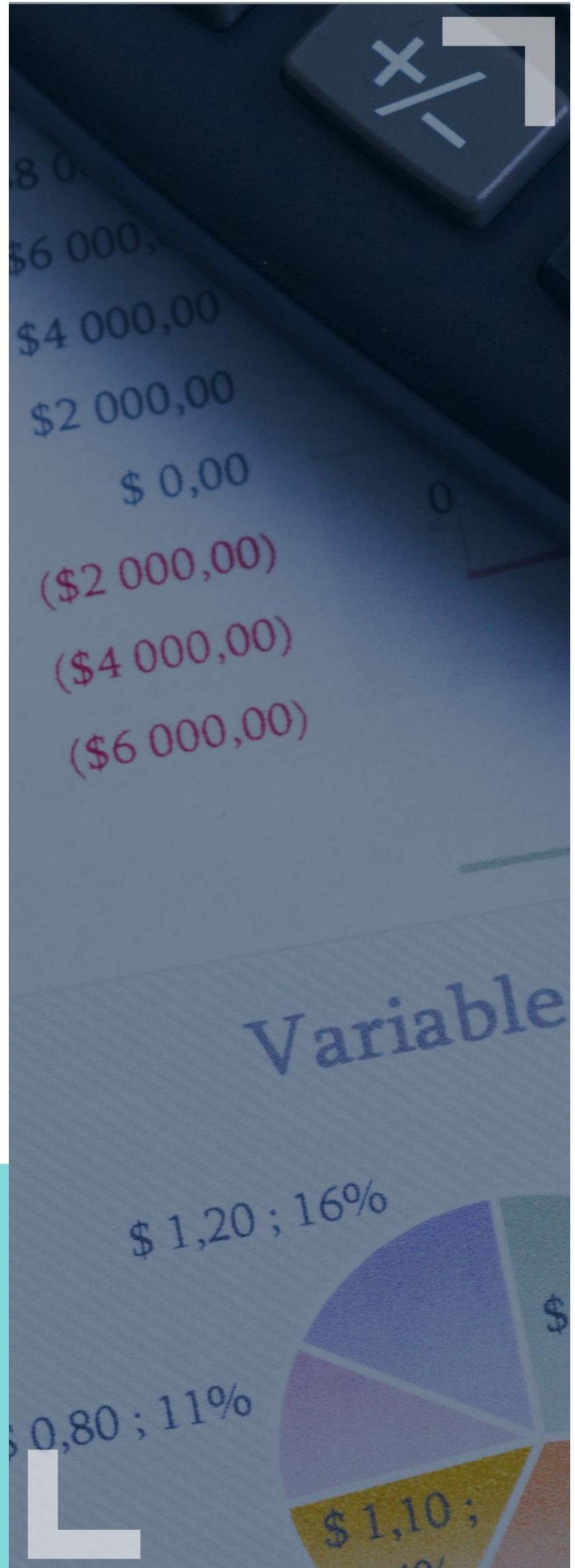
Introduction

Supply chain digital transformation is meant to boost efficiency. It's marketed as the key to streamlining operations, increasing margins, and making logistics more environmentally friendly.

However, there's a silent killer embedded in Fast Moving Consumer Products companies' strategies: the absence of effective truckload planning optimization that not only maximizes payload but also prioritizes product and offers detailed loading guidance to ensure axle weight is correct and products arrive in good condition.

While companies invest millions in supply and demand planning, ERP and execution system upgrades, adding AI-powered supply chain forecasting, and digital twins, they often overlook one of the most basic – and most costly to the budget – elements of logistics execution: how replenishment orders are built.

The result – trucks rolling down the highway with available payload capacity, supply plans that collapse on the dock, and carbon emissions that spike instead of shrink.



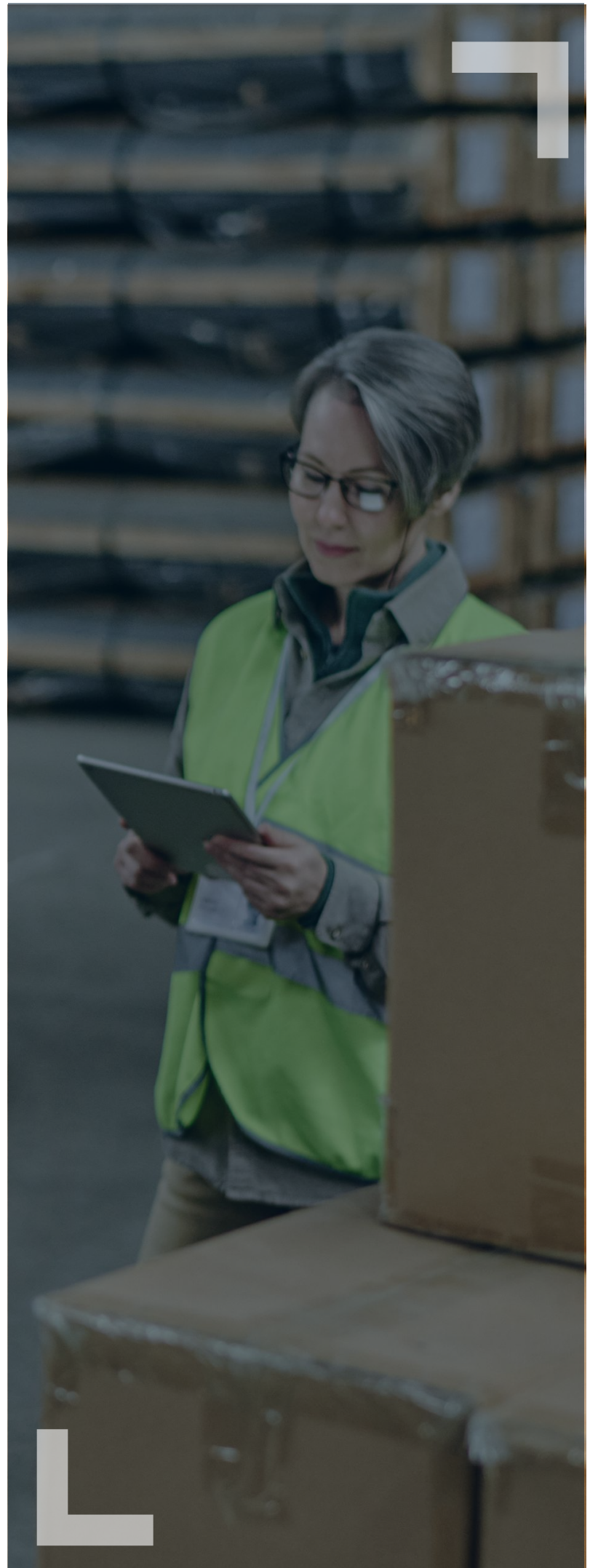
SECTION 1

Prioritize to Avoid OTIF Fines

When truck supply, receiving capacity or inventory is constrained, prioritizing which trucks are shipped becomes essential – it's the key to maintaining high customer fill rates and **avoiding OTIF fines**.

When not everything can move at once, the focus must shift to what needs to move now versus what can wait. That involves zeroing in on importance using some measure like days of supply.

Without clear priorities, companies risk wasting limited capacity on less critical items, while the products that truly drive revenue growth are left behind. In tight freight conditions, every pallet on every truck matters – so every decision must as well.



The 91% Problem: Underloaded Trucks and Overlooked Potential

Let's begin with a statistic that should catch any logistics executive's attention: a recent survey of 158,000 trucks in Georgia found that 91% were severely underloaded.

That's not a typo. **More than nine out of ten trucks were running below capacity**, wasting fuel, clocking miles, and generating emissions without carrying their weight – literally.

This isn't a driver issue. It's not a warehouse mistake. **It's a planning failure.**

Most supply chain planning tools excel in areas like demand forecasting and deployment planning.

However, they struggle with load-building actually configuring shipments to meet legal, feasible, and efficient load requirements. They either ignore this step or treat it as a post-process. (Not my job?) This poses a problem because you can't optimize when you don't consider the real world



Legal Loads Aren't Optional – They're Foundational

There's a common misconception in planning circles: that load legality and feasibility are just details of execution. Some think the shipping site, "Joe" on the shipping dock or the carrier will "figure out" these aspects. But anyone who's worked on a dock knows this is risky thinking.

The U.S. doesn't only have weight limits on trucks. Each state sets axle-based weight limits and rules for axle placement. This means, a truck can meet the total weight limit but still be illegal – and get detained at a weigh station – if the load isn't properly balanced.

One of the most stringent axle restrictions is often called the "California bridge formula". What they really mean is the California axle placement law (or kingpin restriction) that mandates the rear-most trailer axle to be no more than 40 feet from the trailer kingpin.

The bridge formula name is a misnomer. The Bridge Formula is a U.S.-wide regulation designed to spread weight across a wider span of a bridge.

The formula rewards spacing axles as far apart as possible to distribute the weight.



The Chaos of Overweight and Infeasible Shipments

Imagine this scenario: A supply plan is created at HQ. It's smart. It's efficient – on paper. It batches orders to maximize trailer space, chooses the lowest-cost shipping mode, and meets all the correct dates. Then it gets to the shipping site, and it blows up.

The problem? The items don't stack properly. Or a new loader places the product in the wrong sequence, causing it either to not fit it all or to be returned to the plant for reloading once the truck hits the scales. On a busy dock, this is highly disruptive. Often, the lift truck driver takes a couple of pallets off and sends the load on its way.

Murphy's law predicts that the pallets removed are the most needed for customer shipments. Feasible load-building isn't just about stuffing everything in. It's about knowing how to stack, sequence, and distribute items so the truck can travel legally and safely without the risk of toppling over if the driver needs to brake or turn quickly.

If your plan can't be executed safely or legally, then it's not a real plan. It's dangerous fiction and can badly hurt customers as Available to Promise (ATP) inventories are distorted. Customers are led to expect inventory that may not be there.

Good companies plan – great companies turn executable plans into action.

This isn't just theoretical. It occurs daily in facilities that follow top-down shipment plans without regard for actual on-the-ground execution.

When this cycle repeats, companies start to develop a culture of defensive planning. They reduce weight targets to prevent overweight loads. They create buffer inventory. The efficiency improvements promised by digital transformation vanish into thin air – while transportation and labor costs continue to obscure the true, but hidden, inefficiencies.



What's Really at Stake:

Customer satisfaction, Dollars, and CO₂

It's not just about money – though that part is tough enough. Underloaded and misloaded trucks lead to more trips, increased miles, and higher fuel costs. And remember Murphy? Customer satisfaction drops because the necessary product is left at the dock.

Let's do some rough math. If 91% of trucks are underloaded and even small improvements could boost payload by 5-10%, it could save millions of miles per year for a large shipper. That also means millions of pounds of CO₂ that won't be emitted. In a world where carbon reduction is no longer a “nice-to-have” but required, this inefficiency is more than wasteful – it's negligent.

But it also involves millions of dollars. In a case study published in Inbound Logistics, Riviana Foods, a half-billion-dollar division of Ebro, said they saved \$1 million a year because of load optimization.

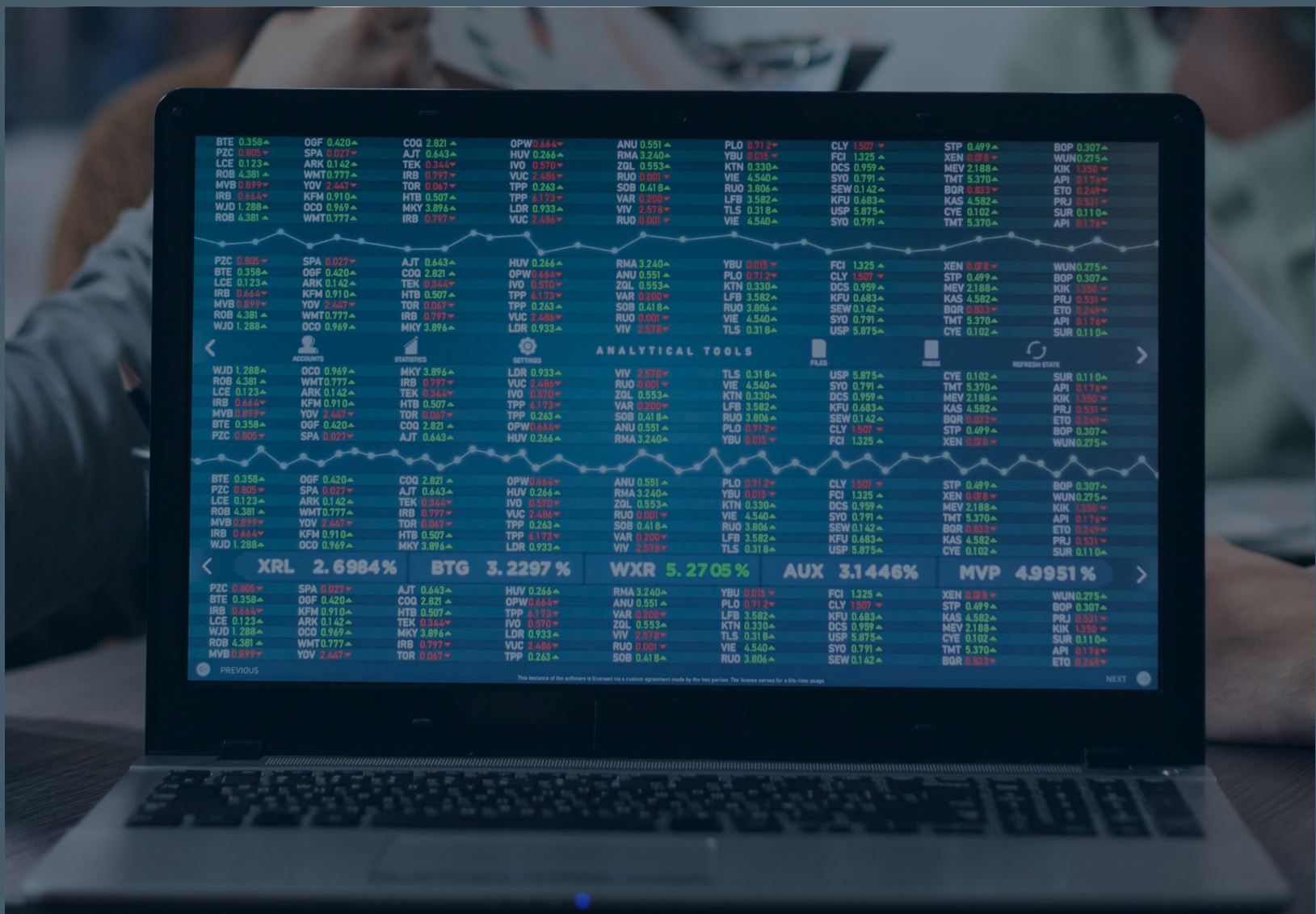


Why Legacy Tools Fail to Hit the Mark

So how did we get here? Most supply chain planning systems operate in silos. They work independently from the real-world operations. They don't consider how weight is spread on axles or how a dock crew will sequence the load. They treat execution as a black box

That assumption might have worked when supply chains were slower, less complex, and less scrutinized. But today, it's a recipe for failure.

Modern logistics execution requires close coordination between planning and physical reality. This involves knowing how items will be loaded when creating stock-transfer orders. It also means developing a 3-D loading diagram and calculating axle weights as the shipment is assembled. Additionally, it requires generating plans that are actually executable – not just ones that look good on a spreadsheet.



Auto02: The Bridge Between Planning and Execution

This is where Auto02 steps in. Auto02 isn't just another optimizer. It's a load feasibility engine that integrates with your planning stack and ensures that every shipment is both legally axle-compliant and physically buildable – before it hits the dock.

Importantly, it provides the loader with detailed guidance on how to place each pallet solving the truck's Tetris puzzle.

The 3-D load diagram of the shipment is legal and arrives in good condition. And most importantly, it confirms everything on the stock transfer order is on the truck.

Auto02 acts as the bridge between the ideal world of the planner and the real world of the warehouse.

Here's how it works:

Axle-Aware Planning: Auto02 considers all the states the load will pass through – including restrictions from states like Illinois, Tennessee, and, of course, the infamous “California kingpin rule” axle weight limits – from the start. No more overweight surprises or last-minute reconfigurations

Physical Feasibility Simulation: The system considers stacking rules, item fragility, and site capabilities. If your DC wants to maximize lift truck productivity by shipping pallets in pairs, it tries to maximize that at the same time as maximizing payload. Auto02 provides detailed guidance to the loader

CO₂ and Cost Visibility: Auto02 not only optimizes payload but also aims to maximize dock productivity. It provides visibility into how load optimization affects the warehouse, emissions, and transportation costs, enabling deliberate tradeoffs instead of blind decisions

From Silos to Synergy

Let's be clear: this isn't about discarding your existing planning system. It's about addressing the blind spot that's costing you money, time, and environmental credibility.

Supply planning without load feasibility is like composing a symphony for instruments you don't possess. It might sound perfect in theory, but it falls apart when faced with reality.

Auto02 creates harmony. It's the missing instrument in the digital transformation orchestra. And with it, you don't just plan better – you execute better.

Good Companies Plan – **Great Companies Execute**

As we enter an age of high efficiency and environmental responsibility, companies will need to demonstrate that their logistics strategies are not just clever – they are real. That they can be implemented legally, reliably, and sustainably.

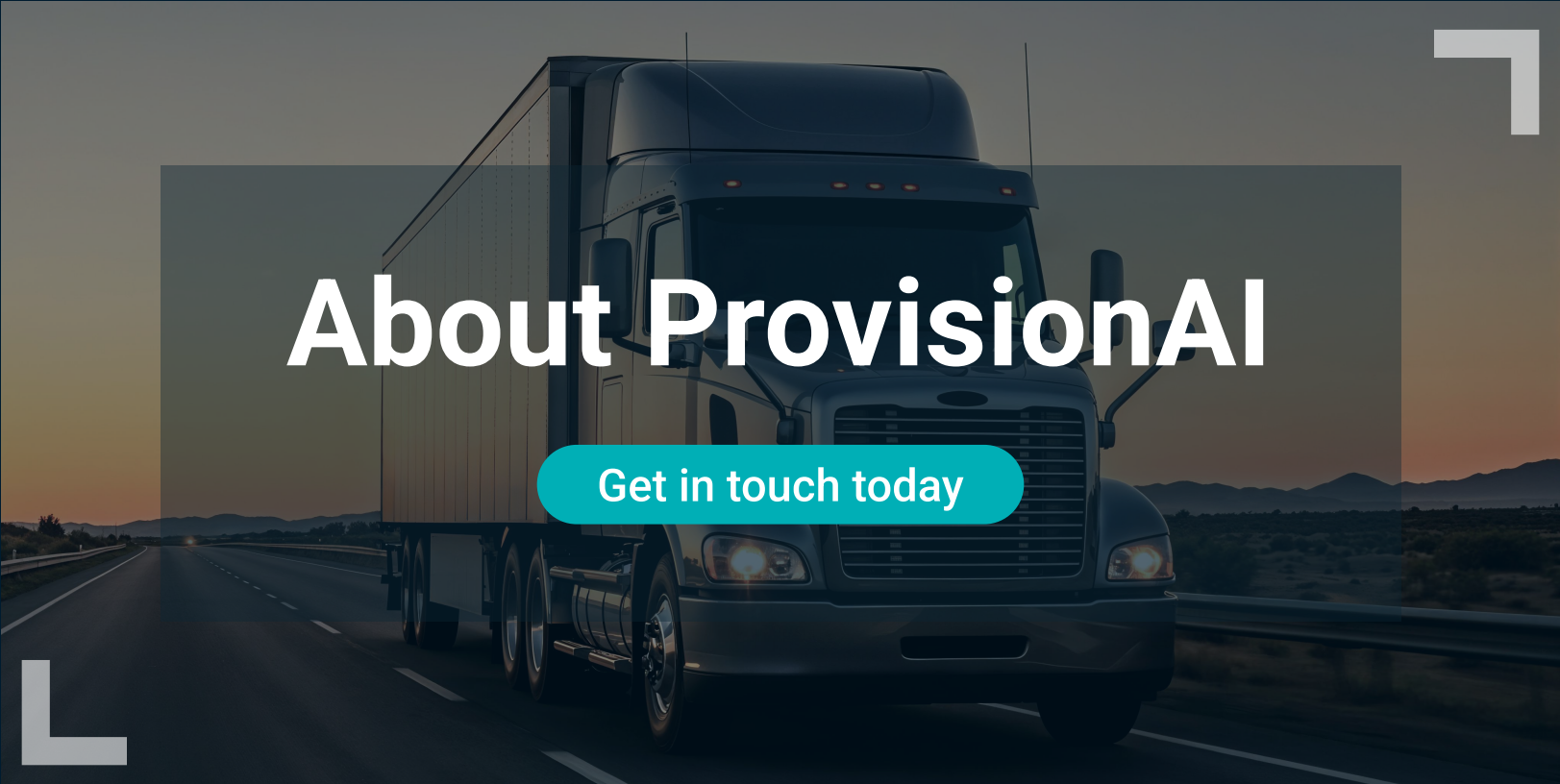
Load optimization isn't just a bonus feature; it's a critical business requirement. Ignoring it leads to costly errors.

It's time to fix that.

It's time to make your digital transformation physically executable.

It's time for AutoO2 shipment optimization and load diagramming.

Ready to cut freight costs through better planning? **Let's talk.**



About ProvisionAI

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