CASE STUDY

OEM & Automotive Assembly

Automotive Supply Chain Intelligence

One missing component stops the entire assembly line. AI made supply risk visible weeks before it became a stoppage.

Automotive OEM & Tier-1 assembly · 3 plants · 1,400+ component SKUs · JIT production model

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1. Overview

An automotive OEM assembly plant operating on a just-in-time model with 1,400+ component SKUs and 80+ Tier-1 and Tier-2 suppliers was experiencing production line stoppages at a rate that had become commercially and operationally unsustainable. Each stoppage averaged 8 hours of lost assembly time - representing both direct production loss and the risk of triggering penalty clauses in their customer delivery contracts. Four to six stoppages per quarter had become the accepted baseline.

The root cause was consistent: a Tier-2 or Tier-3 supplier would delay delivery of a single component, the Tier-1 would pass on the delay, and by the time the impact reached the assembly plant, there was no buffer stock and no alternative source activated. The visibility gap was structural - their ERP tracked Tier-1 orders but had zero visibility into Tier-2 and Tier-3 supplier performance. Every supply disruption was invisible until it had already reached the line.

2. Key Results

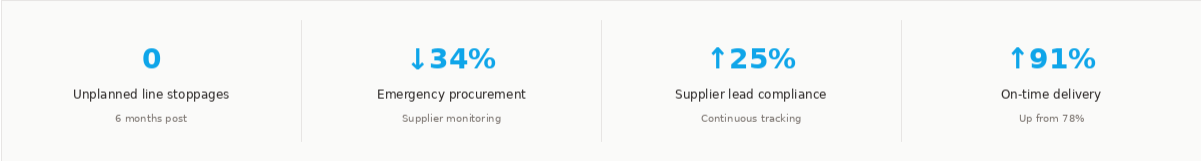

Figure 1: Key outcomes - 6 months post-deployment

3. Challenges

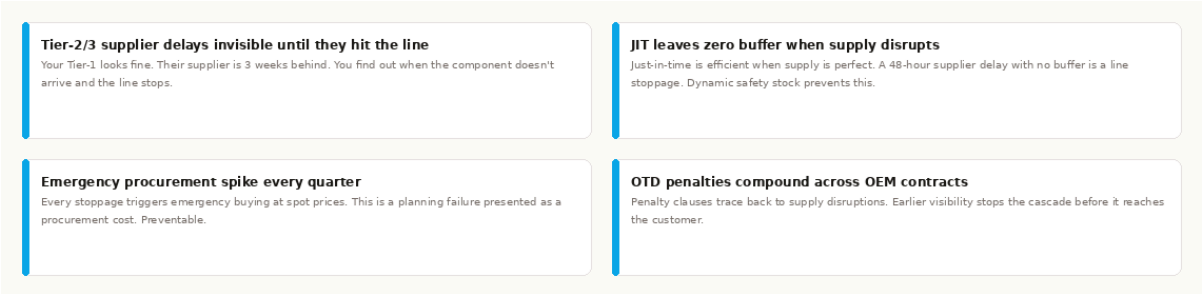

Figure 2: Four supply chain challenges in JIT automotive assembly

Tier-2 and Tier-3 Supplier Risk Invisible Until Line Impact

JIT models are built on the assumption that supply is reliable. When a Tier-2 supplier delays by 3 days, the Tier-1 has no buffer. When the Tier-1 delays, the OEM has no buffer. The entire risk propagates silently through the supply chain until it hits the assembly line - at which point the only options are emergency sourcing or a stoppage.

Zero Safety Stock Means Any Disruption Becomes a Crisis

JIT efficiency comes at the cost of resilience. Dynamic safety stock - calculated per component based on the volatility of its specific supply chain - provides a buffer that absorbs disruptions without requiring a line stoppage. The carrying cost of the buffer is a fraction of the cost of one stoppage.

Emergency Procurement Spikes Every Quarter

Unplanned stoppages generate emergency procurement events - spot market buys at 2–5x standard cost, often from unqualified vendors. This is a planning failure that presents as a procurement cost. With earlier supply risk visibility, the procurement event happens at standard cost and from a qualified vendor, 4 weeks ahead.

OTD Penalties Compound When Supply Disruption Reaches the Customer

A production stoppage that delays finished vehicle delivery triggers OEM contract penalty clauses that can exceed the cost of the emergency procurement itself. Earlier visibility of supply risk prevents the cascade: supplier risk → component shortage → production stop → delivery delay → penalty.

4. Our Solution

We connected to their ERP and integrated data feeds from Tier-1 supplier systems, creating a multi-tier supply network view that extended visibility to Tier-2 and Tier-3 vendors. AI risk scoring was applied to every supplier relationship - tracking on-time delivery rate, lead time variance, and inventory coverage. Dynamic safety stock recommendations were generated per component, calibrated to each component's specific supply chain volatility.

Modules Deployed

Multi-Tier Supplier Risk Tracking	**Dynamic Safety Stock Engine**	**Component Shortage Prediction**
Emergency Procurement Intelligence	**Production Risk Alerts**	**AI Assistant**

Implementation Timeline

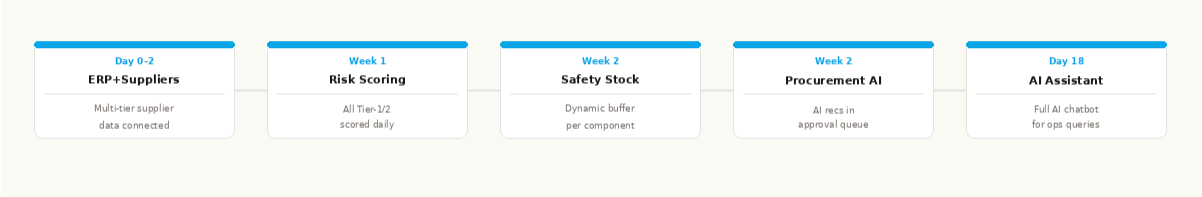

Figure 3: Multi-tier visibility live in week 1. Zero stoppages from week 4 onwards.

Key Capabilities

- **Multi-tier tracking:** Multi-tier supplier visibility - risk scores for Tier-1, Tier-2, and Tier-3 suppliers updated daily, not just at point of failure
- **Adaptive safety stock:** Dynamic safety stock - per-component buffer calculated from supply chain volatility, not static JIT zero-buffer logic
- **Predictive alerts:** Shortage prediction - AI identifies components at risk of shortage 4–6 weeks ahead, with recommended procurement action
- **Emergency sourcing:** Emergency procurement intelligence - when emergency sourcing is unavoidable, AI identifies qualified alternatives at best available cost
- **AI chatbot:** AI Assistant: 'Which components have Tier-2 delay risk in the next 3 weeks?' - instant multi-tier view

5. Results - Before & After

Area	Before	With Innovacio
Line stoppages	4-6/quarter 8 days avg	0 in 6 months post
Tier-2/3 visibility	Zero — blind until failure	Real-time multi-tier tracking
Safety stock	Static JIT zero buffer	Dynamic adjusted for risk
Emergency procurement	22% of monthly budget	↓34% and declining
Lead time compliance	Inconsistent — surprises weekly	↑25% monitored
OTD to customer	78% below SLA	91% and improving

Figure 4: Six production and supply chain metrics - before and after

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> We had accepted that 4–6 production stoppages a quarter was just how this industry works. It is not. It is how the industry works without supply visibility. In 6 months on the platform, we have had zero stoppages. The Tier-2 risk that used to be invisible is now a daily dashboard item.

- Rajiv Menon, VP Manufacturing Operations · AssemblePro Automotive

6. See It in Your Operation

We connect to your ERP and Tier-1 supplier systems and show you your current Tier-2 and Tier-3 risk profile - in a 30-minute call, on your actual supply network.

Innovacio Technologies AI in Supply Chain	**Book a Free Discovery Call** 30 minutes · No commitment · Your data	**Phone** **Email** **Web**	**+91 90072 71601** **hello@innovaciotech.com** **innovaciotech.com**