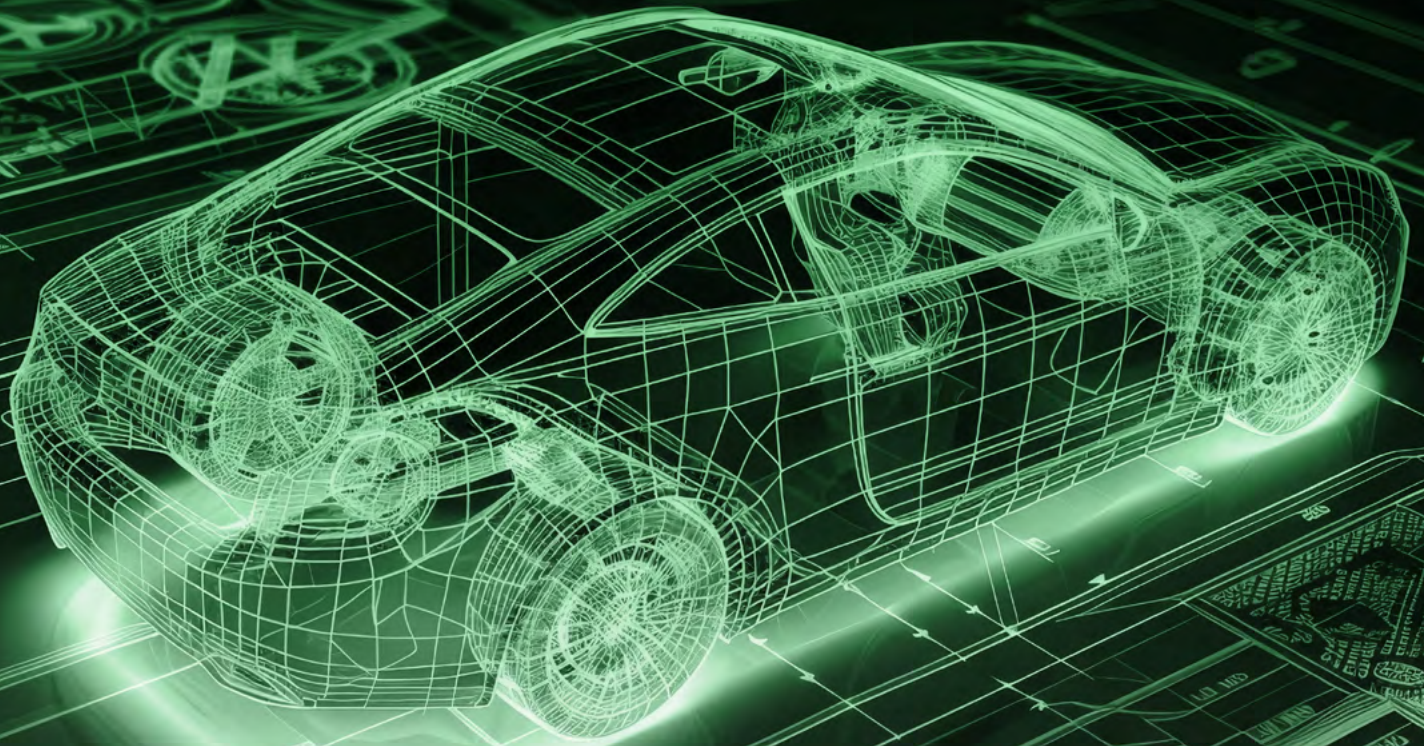


ENABLING SUPPLY CHAIN ORCHESTRATION IN AUTOMOTIVE

A collaborative model for resilience, innovation and ecosystem alignment



/ IN AUTOMOTIVE, SUPPLY IS NOW A SOURCE OF ADVANTAGE—NOT JUST EXECUTION.

Automotive supply chains are being reshaped by two converging forces: the growing strategic importance of electronics and the need for more predictable continuity of supply. As vehicles become increasingly software-defined, certain components—particularly semiconductors—have moved from being interchangeable inputs to foundational elements of vehicle platforms and driver experience.

OEMs, Tier 1 suppliers and semiconductor manufacturers are adapting to this shift from different positions within the ecosystem. Supply chain orchestration has emerged as a collaborative operating model that aligns these interests. By introducing structured coordination—often enabled by a Supply Chain Services Provider acting on behalf of the OEM—orchestration improves how demand signals, inventory strategies, and response options are managed across the ecosystem. When implemented with clear governance, it strengthens resilience, supports innovation and creates shared value without disrupting established production flows.

WHY SUPPLY STRATEGY HAS BECOME A STRATEGIC IMPERATIVE

Over the past several years, supply considerations have moved decisively into the board room within automotive organizations. This shift reflects a growing recognition that continuity of supply for critical electronics is now directly tied to revenue protection, platform execution and brand credibility.

Many OEMs have responded by investing in deeper internal expertise—building teams that better understand semiconductor manufacturing processes, capacity allocation dynamics and the external forces that influence availability. These efforts have improved visibility into where risk concentrates across vehicle portfolios and how upstream decisions can affect downstream outcomes.

At the same time, the traditional strengths of the automotive ecosystem remain essential. Tier 1 suppliers continue to carry responsibility for design, system integration, functional safety, quality assurance, and manufacturing execution at scale. Semiconductor manufacturers and their partners must plan capacity investments over long horizons while responding to signals from multiple end markets, many of which operate on very different demand cycles.

What has become clear is that no single participant can address these challenges in isolation. The opportunity lies not in redefining roles but in improving coordination of information, intent and responsibility across them. Supply chain orchestration provides a framework for doing exactly that—adding structure where informal coordination once existed and enabling earlier, more deliberate responses to changing conditions.

ELECTRONICS, SOFTWARE AND THE CHANGING NATURE OF DIFFERENTIATION

The transition toward software-defined vehicles is reshaping how value is created in the automotive industry. Functions that were once implemented through numerous distributed electronic control units are increasingly consolidated into zonal or centralized compute architectures, with more capability delivered through software.

These architectural changes are driven by both technical and practical considerations. Consolidation can reduce physical complexity, support faster feature evolution, and enable more effective lifecycle management. At the same time, it concentrates dependency on a smaller number of highly critical components, many of which rely on advanced semiconductor technologies with long qualification, validation timelines and production lead times.

As a result, the supply strategy for key semiconductors is increasingly intertwined with platform strategy. High-performance compute, advanced connectivity, ADAS processing and power electronics each impose distinct constraints on manufacturing processes, capacity investment and exposure to demand swings outside the automotive sector.

Tier 1 suppliers benefit from improved continuity of supply for critical components without being required to carry disproportionate additional inventories and the resulting working capital burden.

SUPPLY CHAIN ORCHESTRATION AS A CALIBRATION TOOL

Supply chain orchestration can be understood as a calibration tool, fine-tuning existing operations to improve accuracy and performance, rather than a full structural overhaul. It connects OEM priorities, Tier 1 execution realities, and supplier capacity planning through a more explicit operating framework.

One approach is to engage a Supply Chain Services Provider and embed that partner within the upstream supply chain. In this role, the provider acts as an agent for the OEM, performing services such as purchasing, holding and selling components as well as providing supply chain analytics. This enables the OEM to influence supply continuity and inventory strategy while allowing Tier 1 suppliers to maintain established manufacturing and logistics flows.

The result is a form of control without disruption. OEMs gain earlier insight into risk and more options for response. Tier 1 suppliers benefit from improved continuity of supply for critical components without being required to carry disproportionate additional inventories and the resulting working capital burden. Semiconductor manufacturers gain clearer, longer-range demand signals that support capacity planning and investment decisions. The supply chain parties become more aligned to their goals and objectives.

Supply Chain Orchestration as a Collaborative Operating Model

This model shown in Figure 1 illustrates how supply chain orchestration aligns OEM strategy, Tier 1 execution, and component supplier capacity through a coordinated program layer. By combining structured demand signals, shared visibility and disciplined execution, orchestration enables continuity for critical components while preserving established production flows and strengthening collaboration across the automotive supply chain ecosystem.

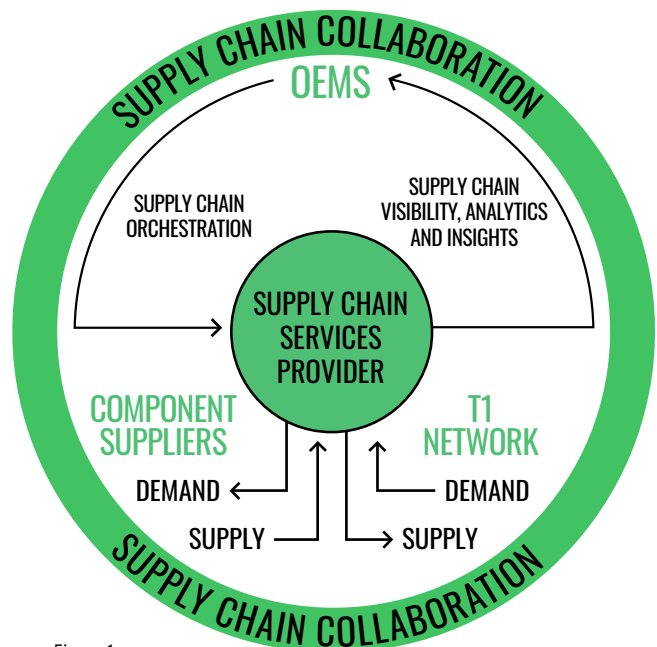


Figure 1

WHAT SUPPLY CHAIN ORCHESTRATION IS—AND WHAT IT IS NOT

Supply chain orchestration isn't a major overhaul of the automotive ecosystem. It's a targeted operating model, more like a calibration tool, meant to improve coordination as electronics become more central—and more limiting—to vehicle platforms.

ORCHESTRATION IS...

An operating layer that aligns OEM demand intent, planning signals and response options across the supply chain.

A framework that works within existing OEM, Tier 1 and supplier relationships.

A way to influence supply continuity and resilience without the OEM or Tier 1 taking custody of components or disrupting production flows.

ORCHESTRATION IS NOT...

A replacement for Tier 1 sourcing, integration or manufacturing responsibilities.

A shift in intellectual property, liability or quality ownership.

A centralized command-and-control approach to supply management.

COMMERCIAL CONTINUITY, TRANSPARENCY AND GOVERNANCE

Implementing orchestration requires thoughtful governance. Existing commercial relationships must be respected, and expectations around data sharing and pricing confidentiality carefully managed.

In many cases, orchestration introduces a need to adjust how demand signals are structured. Where Tier 1 suppliers traditionally aggregate demand across OEM programs, orchestration may require that certain flows be disaggregated for OEM-specific planning. This can involve master data alignment and adapted planning processes, but it also creates an opportunity to clarify roles, information boundaries, and escalation paths.

A neutral operating partner can help manage this balance. By defining who sees what information, when, and for what purpose, orchestration can support proactive decision-making without exposing sensitive commercial details unnecessarily.

CAPITAL, COST, AND SHARED VALUE

There is no single financial model for orchestration. Some OEMs may choose to fund strategic inventory directly, others may rely on service providers to finance buffers, and many will adopt hybrid approaches based on component criticality and risk tolerance.

What these approaches share is recognition that resilience has a cost. The value proposition of orchestration is often best understood in terms of avoided disruption—preventing production stoppages, launch delays, and the downstream financial and reputational consequences that follow.

Importantly, orchestration also supports value creation. By aligning supply strategy with long-term platform roadmaps, OEMs improve their ability to innovate and differentiate. Tier 1 suppliers benefit from more predictable inputs and reduced volatility. Semiconductor manufacturers benefit from clearer demand intent over longer horizons.

DIGITAL ENABLEMENT AND DECISION SUPPORT

Digital capabilities are a critical enabler of orchestration. Aggregating supply, demand and inventory data across the ecosystem creates a foundation for earlier insight. The next step is translating that insight into action.

Advanced analytics and AI can support scenario evaluation, highlight emerging risk patterns, and recommend response options—reducing reliance on manual monitoring and enabling faster, more consistent decision-making. This shift benefits all participants by reducing last-minute firefighting and improving alignment between planning and execution.

ADOPTION THROUGH PRAGMATISM

Orchestration is most effective when introduced in a way that aligns with automotive development cycles. New platforms provide natural opportunities to define sourcing strategy, governance and data-sharing expectations from the outset. Pilot programs allow stakeholders to validate assumptions, refine processes and build confidence before scaling.

This incremental approach helps protect supplier relationships while demonstrating tangible value.

FROM VISIBILITY TO INFLUENCE

Many OEMs now have far greater visibility into the semiconductor content of their vehicles than they did several years ago. They understand which components are most critical, where manufacturing dependencies exist, and how external forces—such as competing demand from adjacent industries or geopolitical risk—can affect availability.

The next challenge is influence. In the traditional model, OEMs may recognize a potential constraint but lack a practical mechanism to shape outcomes, particularly when they are not directly selecting or purchasing the components involved.

Switching to direct OEM purchasing alone usually isn't enough. Tier 1 suppliers often hold negotiating power through combined demand from various programs and customers. Holding inventory outside regular procurement channels can lead to obsolescence and traceability concerns that impact everyone involved. Therefore, influence—and ultimately resilience—depend more on integration than on who places the order, giving chip makers better visibility into the automaker behind the demand.

CONCLUSION

As vehicles become more software-defined and electronics-centric, the automotive industry needs supply chain models that support long-term planning, platform stability and shared resilience. Supply chain orchestration offers a structured approach to achieving these goals without undermining the roles of OEMs, Tier 1 suppliers and semiconductor manufacturers.

By aligning signals, responsibilities and inventory strategy, orchestration can reduce volatility, improve predictability and strengthen collaboration across the ecosystem. When implemented with clear governance and mutual respect, it becomes not only a response to disruption but also a foundation for sustained innovation and growth.

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