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Supply Chain Visibility Index: The Definitive Guide

A guide to achieving 100% end-to-end visibility into your entire supply chain

Given the growing levels of globalization, competition, and rising customer expectations in the marketplace, it's become increasingly difficult for companies to gain complete visibility into their complex supply chain and make real-time, informed decisions and adjustments.

To address these challenges, organizations are turning to a supply chain Visibility Platform which delivers complete, real-time views and insights across the eco-system—from suppliers through production and distribution to customers.

It's clear why gaining intelligent, end-to-end visibility into an organization's entire supply chain is so important. Now, with the advent of an intelligent sensor network that can deliver continuous real-time data throughout the end-to-end supply chain ecosystem, organizations can:

- Eliminate supply chain blind spots
- Quickly respond to customers' needs
- Anticipate and avoid disruptions

- Drive increased revenues
- Eliminate waste
- Enhance sustainability
- Reduce operational and working capital costs

- Monitor and measure success instantly
- Seamlessly connect and communicate with all stakeholders

Supply Chain Visibility is the Goal

Turning visibility into actionable insight demands a fundamental shift in the mental model. The shift is from traditional functional efficiency-focused supply chains to demand-driven value networks. The difference in technology is the shift from point-in-time status of product flow from EDI and barcode scans to continuous real-time Internet of Things (IoT) signals. This shift drives 100% visibility from delivery to customers back through integrated business planning, into operations, and back to the supplier network.

Intelligent visibility allows seeing real-time vs. aged, static data and interpreting the data to make sense of it. Ideally, companies will also know what action to take as a result and have systems to alert or trigger that response.

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End-to-end visibility is the game changer for supply chains. It enables demand-driven value networks. This change in operating model enables companies to be dramatically more responsive to market and customer variability and drive significant value for each business in the connected supply chain.
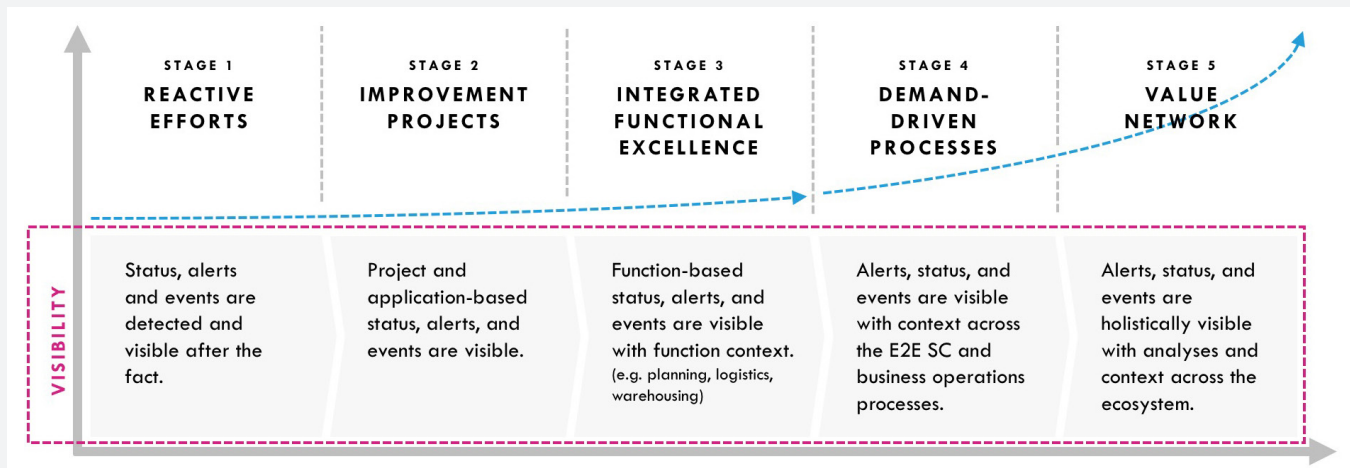

Figure 1: The five stages of supply chain maturity, as defined by Gartner at the top, also have specific visibility maturity impacts – notice how the company gains scope and intelligence at every stage.

As visibility increases across the supply chain, so does the maturity and capability of the overall supply chain operation. Just as Gartner defined demand-driven value networks, they also have a supply chain visibility maturity model. Each of the five stages Gartner defined in their maturity model has specific visibility maturity impacts. (See Figure 1)

STAGE 1

React: Visibility focuses on reacting to events faster to reduce waste.

STAGE 2

Anticipate: Here, visibility feeds more data into analysis to identify areas for improvement.

STAGE 3

Integrate: Continuous monitoring at the product conveyance level (tote, pallet, crate, etc.) through each step of the journey is required and possible to support functional excellence and begin to flow information across the business.

STAGE 4

Collaborate: Visibility here supports a smart end-to-end demand-driven value network. Reaching this stage can increase returns 50-60% through top and bottom-line growth, systematic savings, and better capabilities across the business.

STAGE 5

Orchestrate: The networked ecosystem provides complete visibility integrated into customer operations, the logistics network, and into/ through all plants and supplier operations around the world. Demand and supply are visible on a continuous basis, including tracking all product condition information.

In addition, as visibility maturity increases, the ability to provide more predictive and prescriptive analytics for decision-making also increases.

Gaps in Visibility

Increasing visibility is critical to transformation, performance improvement, and attaining higher stages of supply chain maturity. Yet companies are finding that gaps in visibility inside manufacturing facilities, distribution centers, and between locations is constraining their strategic or digital transformation. Many of the business and operating processes that tie locations together in the ecosystem today fail to capture critical multi-dimensional data. This includes edge data of the location, temperature, humidity, shock, as well as other condition information that is crucial for advanced planning and execution.

These visibility gaps are caused by:

Incomplete Vision.

Lack of an end-to-end, wholistic view of the supply chain ecosystem – starting with information from trading partners of suppliers to work in process to delivery to customers.

Data Collection Challenges.

Reliance on large, legacy IT investments such as ERP systems limits companies' ability to collect new types of data, not just structured data from older technologies like EDI and barcode scans.

Limited Edge.

Dated RFID technology for capturing information at the edge typically placed at choke points and is often not 100% reliable.

Integration Issues.

Heterogenous enterprise architectures of IT systems, processes, and data architectures are difficult to integrate, and create silos of data in the enterprise.

Narrow Focus.

Project improvement efforts are singular in scope within manufacturing, distribution, procurement sourcing, and customer management teams rather than integrated into a holistic supply chain improvement effort.

> "Today's always-on IoT sensing capabilities can deliver enormous value, but only if companies make sense out of what they sense. Turning vast quantities of data into useful intelligence is a multi-faceted challenge. There are now supply chain-specific application sets designed to do that. They draw on an IoT sensor network to deliver visibility in the context of the end-to-end supply chain. Selecting and instrumenting key points to feed into such a system enables sensible sensing."

Prof. Hau Lee, Ph.D.
Operations, Information and Technology at Stanford University

Gauging Visibility Gaps

Companies may have more gaps in visibility through their extended supply chain. Knowing where your visibility gaps are, how many you and your trading pars have, and what impact they have can focus investments on top areas for business improvement and ROI.

Most companies are missing quite a few elements, so they have significant gaps. Common examples of data sources that are missing are:

- Continuous live monitoring through a manufacturing facility

- Complete tracking as product flows in a distribution center

- Tracking product condition at the pallet level, not just for a vehicle in total, as products move in-transit

- Status of products and their conditions at suppliers and through to customer sites

Consider that many companies lack over half of the ways to monitor and improve the operation internally or with ecosystem business partners. Reliance on EDI transmissions, RFID and barcode capture at only select locations is insufficient coverage inside facilities and in-transit. So, what is the path forward?

Companies need to identify what their SCVI is today and through the right strategic review agree on a target for SCVI across the supply chain, such as 75%. The target SCVI should be set so that achieving visibility levels beyond that target could result in limited additional value. In any event, the improvement of SCVI results in increased value to the ecosystem, whether that be increased revenue, earlier revenue recognition or lower cost operations.

Through an entire end-to-end ecosystem, there are many points of volatility and key interest. Gaining visibility into more of these points moves companies into an advantaged position. Gaining more visibility matches up with overall supply chain maturity. (Figure 2.)

> " Transformation and pivoting from traditional, functionally siloed supply-driven operations, (often reacting to supply chain events) to customer-driven operating models is a significant change journey. Enabling this new operating model powered by the Cloudleaf solution to provide a high visibility index will result in significant value creation and the potential for achieving Stage 4 and 5 level operations. "

Roddy Martin
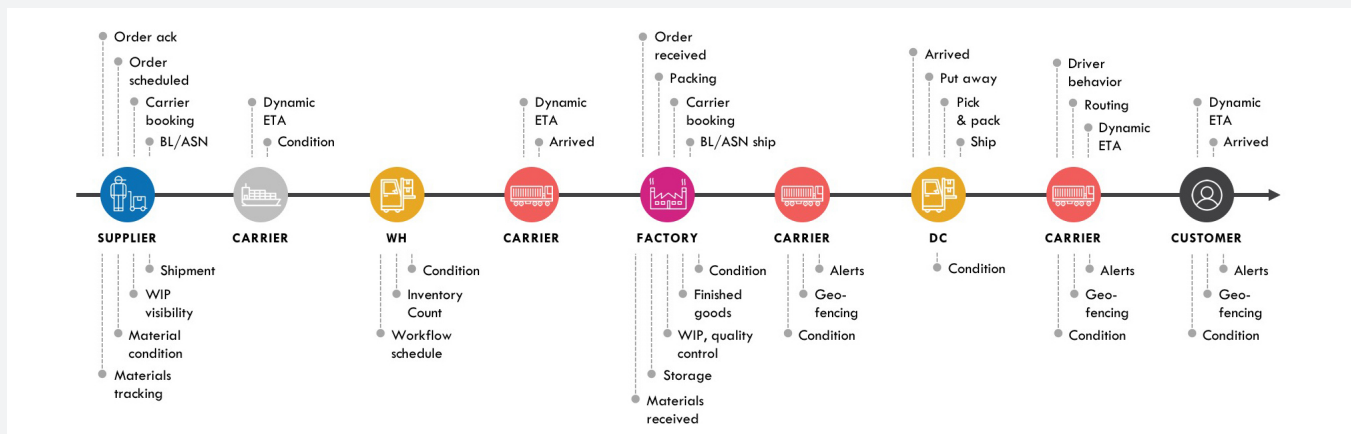
Supply Chain Industry Analyst

Figure 2: Gaining more points of complete visibility through the end-to-end ecosystem builds supply chain capabilities and enables accelerated progress toward demand-driven maturity.

One of the typical "black holes" in supply chain visibility is the manufacturing plant. This "Make" portion of the supply chain is often disconnected, but for a truly demand-driven ecosystem, it must be visible in considerable detail. Similar to the end-to-end ecosystem, there are many points in a production facility where gaining visibility can deliver enormous value (Figure 3).
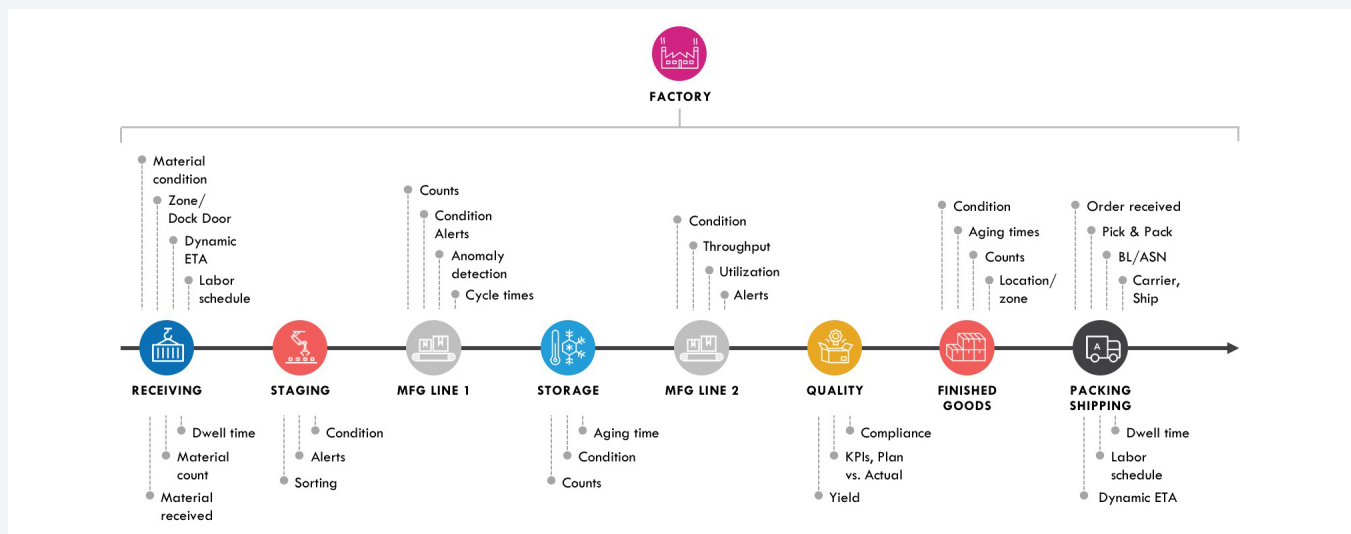

Figure 3: Plant operations are at the center of every supply chain; to gain maturity, many key product milestones need to be visible throughout the enterprise and ecosystem.

"The Cloudleaf cloud-based solution is game-changing for Life Sciences operations leaders and the management of end-to-end product supply. It is akin to have an intelligently talking supply chain with distributed IoT sensors continuously broadcasting and communicating the status and whereabouts of the product being tracked to process and materials management.

Maria Nieradka

Life Sciences Global Operations Executive

Closing the Visibility Gaps

Advances in technology for capturing detailed data at every point in the supply chain now makes it possible to close visibility gaps. This exhaustive data capture allows for this much broader, more inclusive data flow through to the cloud and to critical planning and monitoring systems. The planning systems, where tremendous investment has been made to date, can now rely on data that covers the entire supply chain rather than a limited set of points or just one part of the supply chain. Greater visibility delivers the potential for much greater accuracy in planning and monitoring systems and enables you to use predictive analytics to anticipate and avoid issues.

To close the gaps, there is a four-step process:

Step 1	Understand volatility and its impact in the business—demand, supply, operations, finance
Step 2	Identify the critical problems (lost revenue, waste, costs, lost opportunities)
Step 3	Discover high-impact dark spots across the network and make them visible capabilities
Step 4	Leverage analytics and planning platforms to use visibility to drive value

New Era of Supply Chain Visibility

Companies have a vast opportunity to create new value by closing visibility gaps in the supply chain. Cost reduction is just the beginning. Improvements in planning would leverage all the previous investments and improve service throughout the ecosystem. That, in turn, opens up new revenue opportunities – in being a preferred supplier, in recognizing revenue at the earliest opportunity, and in value-added services to customers.

Envision doubling or tripling the visibility across your global ecosystem; going from 20% to 80%. How might you create value up and down, drive out cost, and delight customers? Across a global ecosystem, this could be a trillion-dollar improvement opportunity.

> " Our limited visibility into tooling led to challenging internal audits. Even with software systems to track those tooling inventories, we often could not find tools and as result, suffered millions of dollars in write-downs. We implemented Cloudleaf and gained 100% accurate visibility into 32,000 tools. The solution paid for itself extremely quickly. "
>
> ### Major discrete equipment manufacturer

> We build housing and needed a seamless flow from the factory to the job site. Gaining visibility through the critical elements of that process has lowered our operating costs by 30% and saved us $20M in energy, which is cost we won't need to keep on our books and a better environmental footprint.

Multi-Unit Building Manufacturer

The Supply Chain Visibility Index

Cloudleaf is addressing the gap in supply chain visibility with an IoT-at-scale and AI solution that delivers continuous real-time visibility and insights into supply chain operations, with sensors, edge intelligence, and predictive cloud applications that create The Visible Supply Chain™. The solution requires limited technology infrastructure and low capital expenditure—and can be deployed across the operation rapidly.

Cloudleaf has defined the Supply Chain Visibility Index as a visibility maturity measure. The SCVI is the measure of the capability that all stakeholders have of seeing the current status of selected operating components across the end-to-end business.

The SCVI is defined as the number of points in the end-to-end supply chain where product location and condition data are captured in real time as a percentage of the total number of opportunities where data could be captured.

SCVI is based on the ratio of actual vs. possible visibility of operations and conveyances (tote, pallet, crate, etc.) across the end-to-end value network both internal and external to the organization. The SCVI is a key determinant and measure of a business' ability to systematically track and trace location and condition of all parts, components, conveyances or products across the internal and external ecosystem.

The SCVI represents data related to all elements of visibility but is not limited to the visibility as reflected in software systems or databases. It is a measure of the business' capability to see selected elements across the enterprise. The stages of visibility are consistent with the 5 stages of the Gartner Capability model, which has been proven to provide a holistic path for companies around the world to achieve greater levels of supply chain excellence.

Improving your SCVI results in increased value to the ecosystem, whether that be increased revenue, earlier revenue recognition, or lower cost operations.

Cloudleaf delivers a window into to all things physical across the extended supply chain network via our software-as-a-service application solutions including Capital Assets, WIP, Warehouse and Logistics. In this way, we help enterprises achieve Gartner Stage 4 and 5 supply chain capabilities. With Cloudleaf, organizations can shine the light on supply chain gaps and turn this powerful end-to-end visibility into insight for better decision-making.

Gaining visibility into the supply chain is central to successful digital transformation. Now you can measure your visibility with the Supply Chain Visibility Index, prioritize your situation with the maturity model, and gain the visibility and insight you need to succeed.

Want to improve your Visibility Index?

We'd love to show you how Cloudleaf can help your business.

Email us at **hello@cloudleaf.io**.