



Future Supply Chains

Six Obstacles on the Horizon
and What You Should Be Doing
About Them Now

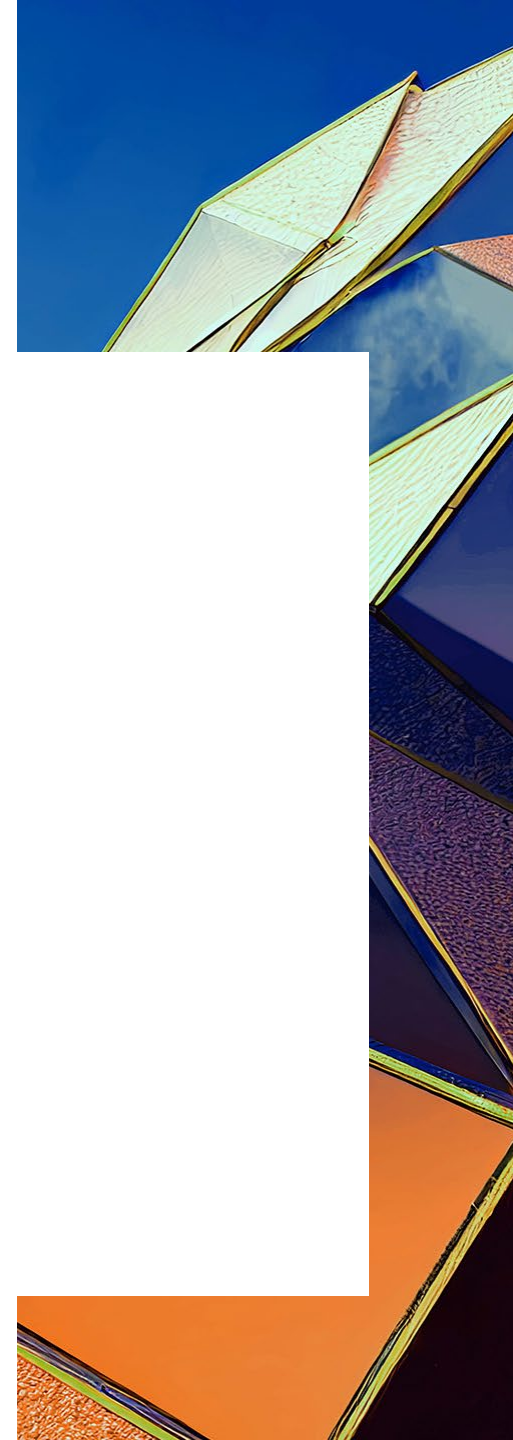
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Obstacle #1 - Labor

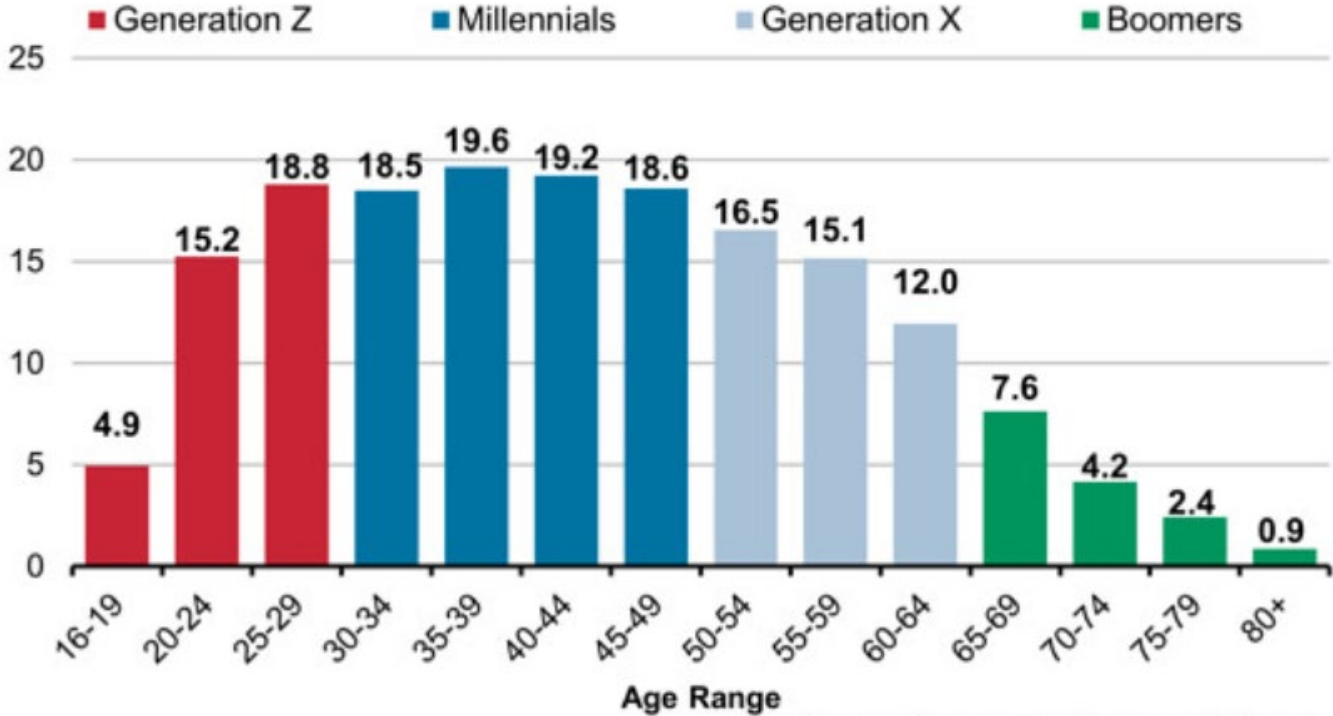
“All labor that uplifts humanity has dignity and importance and should be undertaken with painstaking excellence.” – **Martin Luther King Jr.**

- We made it through the UAW strike!
 - This was a short-term pain point with long-term impacts, but there is a much larger obstacle on the horizon
- The first and most immediate challenge for the global supply chain is the persistent and growing labor shortage
- Why?
 - We are living through the “Great Resignation” and some believe we are still in the “Great Attrition”
 - Couple that with generational realities
 - And the decreasing population growth rate in China, Japan, and Europe

A Millennial-Led Economy Is the Heart of Our Labor Economy

The Workforce in 2030

Projected size of U.S. labor force (in millions) by age, for the year 2030



Source: Department of Labor | WSJ.com

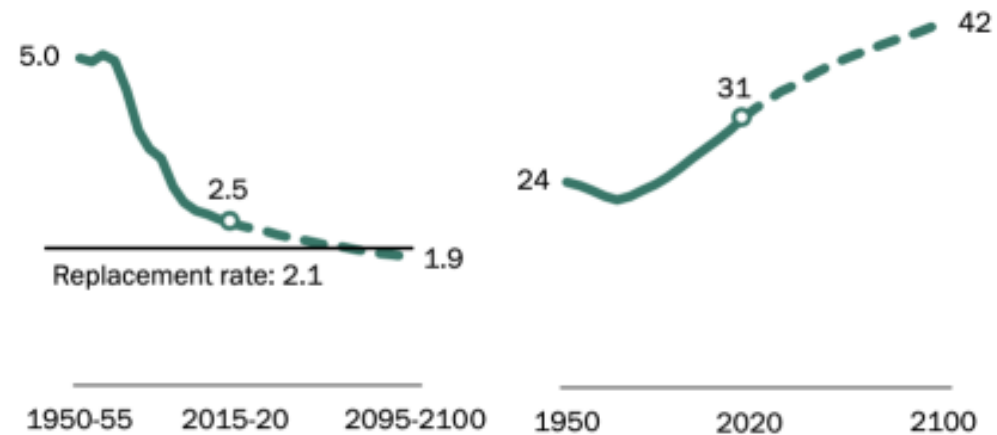
There Will Be Landslides in Population Growth Across China, Japan, and Europe

- By 2100, It Is Predicted That We Will Be at 1.9 (Worse Than Flat)

Global fertility is falling as the world is aging

Number of live births per woman (total fertility rate)

Median age of the world population



Note: The replacement rate is the number of births per woman required to maintain a population at a constant size.

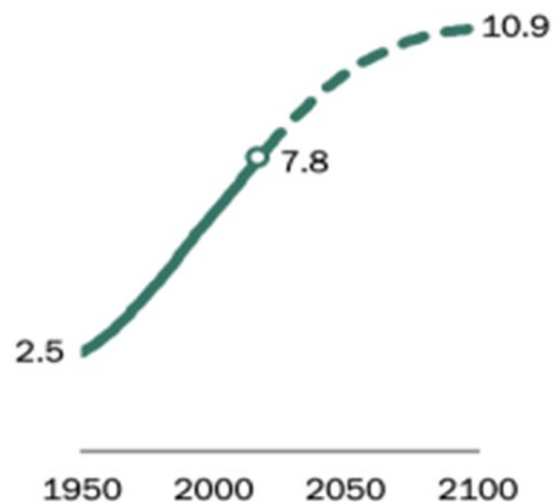
Source: United Nations Department of Economic and Social Affairs, Population Division, "World Population Prospects 2019."

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Population Trends

World population growth is projected to flatten in coming decades

World population, in billions



By 2100, five of the world's 10 largest countries are projected to be in Africa

Countries with largest population, in millions

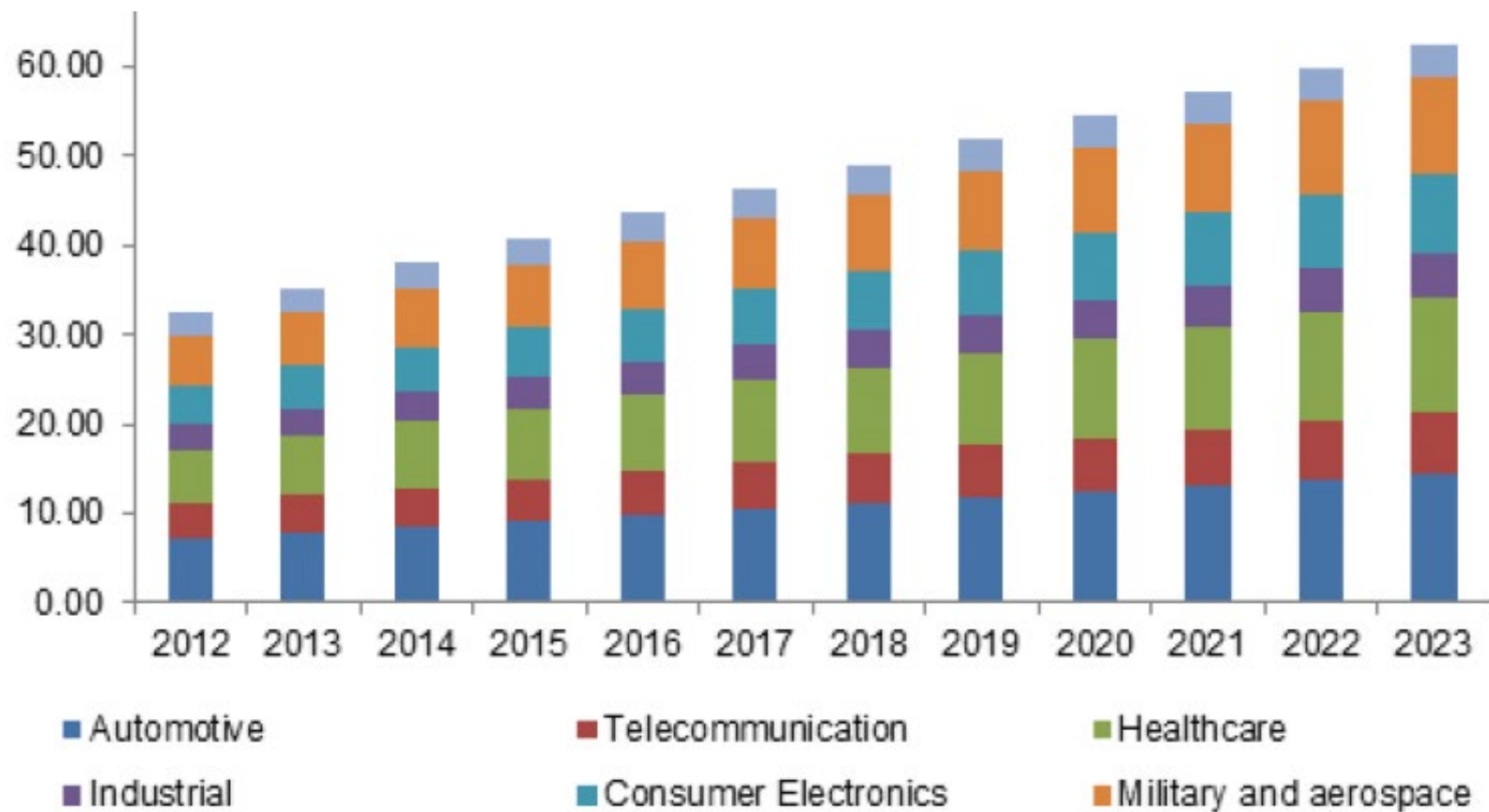
	1950	2020	2100
China	554	1,439	India 1,450
India	376	1,380	China 1,065
U.S.	159	331	Nigeria 733
Russia	103	Indonesia 274	U.S. 434
Japan	83	Pakistan 221	Pakistan 403
Germany	70	Brazil 213	D.R. Congo 362
Indonesia	70	Nigeria 206	Indonesia 321
Brazil	54	Bangladesh 165	Ethiopia 294
UK	51	Russia 146	Tanzania 286
Italy	47	Mexico 129	Egypt 225

Obstacle #2 - Software

“Software is a great combination between artistry and engineering.” – **Bill Gates**

- Thank goodness the Millennials will be running things!
- Embedded software is the new normal and will simplify (and then complicate) everything
- Key issues include:
 - Who owns the software embedded in a manufacturing assembly?
 - Life cycle of products
 - Who is responsible for updating the software and OTA update expectations?
 - Is there a perpetual warranty with OTA updates and what does this mean to consumers, buyers, and suppliers? What does this mean for recalls?

Embedded Systems in the 2020's We Will See It Continue to Grow . . .

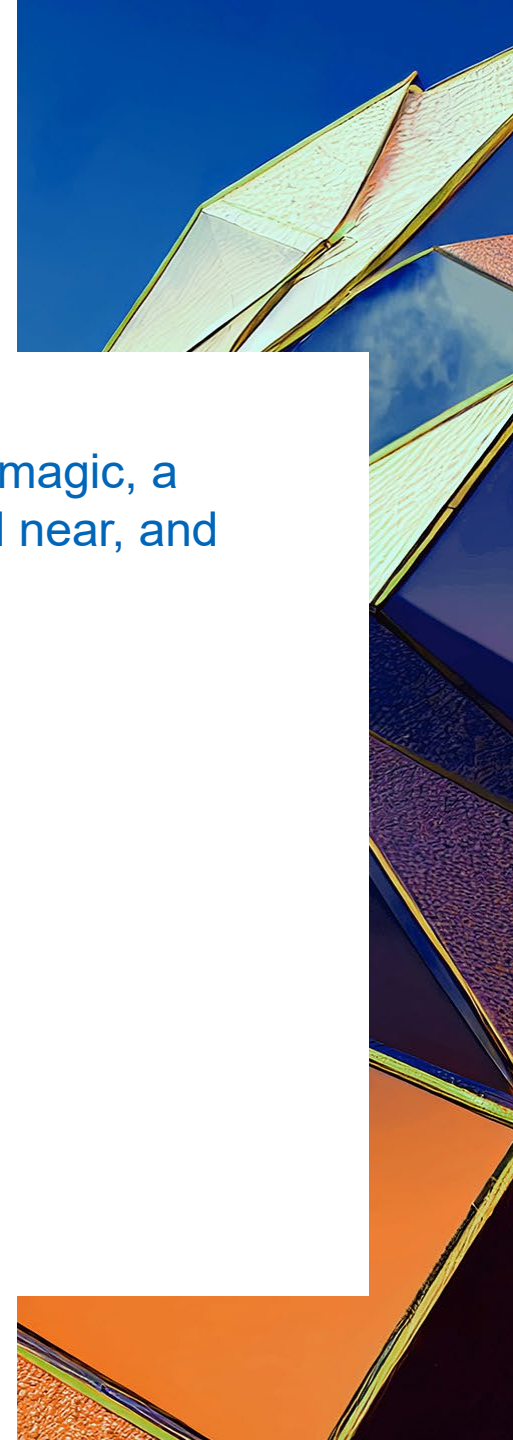


Obstacle #3 - Connectivity

“In their phones were antennas, and these antennas sniffed out an invisible world as if by magic, a world that was all around them, and also nowhere, transporting them to places distant and near, and to places that had never been and never would be.”

– Mohsin Hamid, *Exit West*

- Expectation of instantaneous information
- Expectation of connectivity across all devices and already have seen this happening

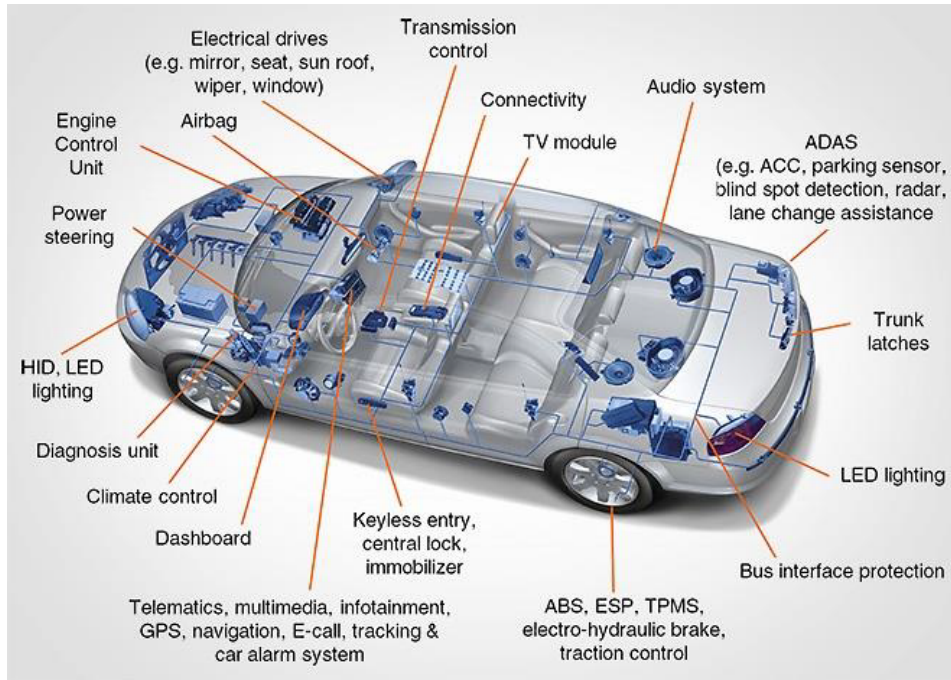


The Jetson's Kitchen Is Here

1. Brew your coffee automatically on an app
2. Remote microwave abilities
3. Remote dishwasher capabilities
4. Touch display for stove
5. Camera inside of the fridge for groceries
6. Remote-controlled washing machine
7. And clothes dryer



The Connected Car Is Here



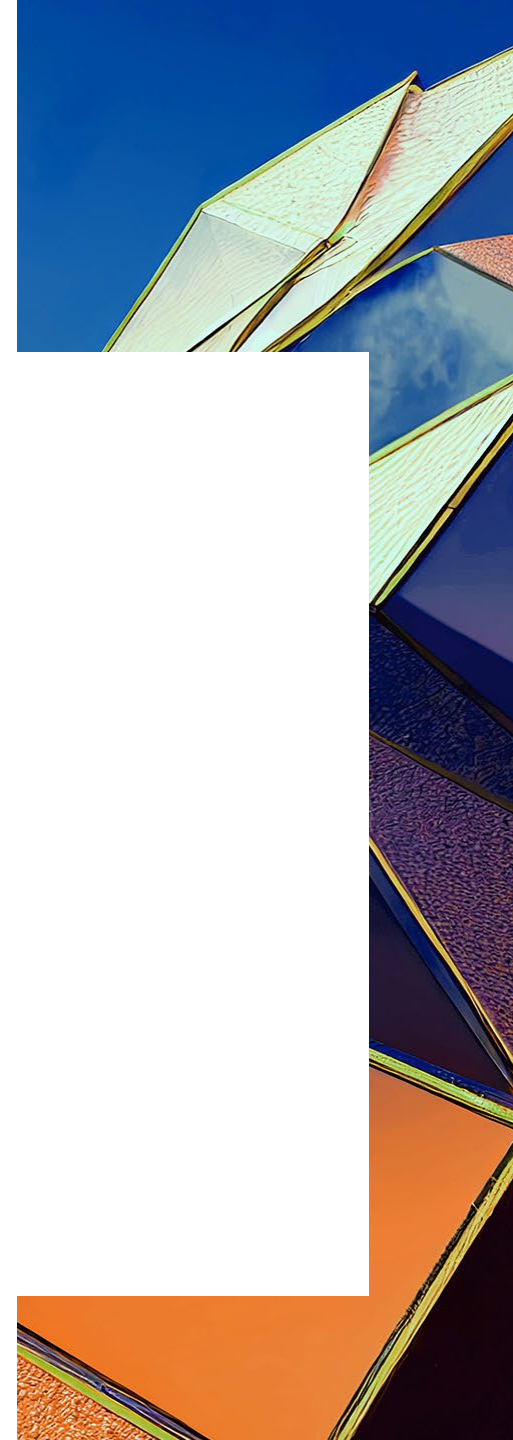
Connectivity internal to a vehicle



Connectivity between all vehicles and surroundings

Connected Cars Are The Norm, But Contracts Have Not Caught Up

- Who is design-responsible for ensuring connectivity in complex assemblies with integrated parts?
- Who is responsible for hacking and cybersecurity issues?
- How will any liability be allocated?
- Who owns the data and what can we use it for?



Obstacle #4 – Artificial Intelligence

“AI is a tool. The choice about how it gets deployed is ours.” – Oren Etzioni

- Using AI to build supply chain resiliency
- A possible solution for some labor pain points to transform manufacturing operations
- It is here and will transform every industry: healthcare, education, transportation, retail, communication, agriculture and legal
- New legal hurdles with respect to regulations, warranties, and responsibility



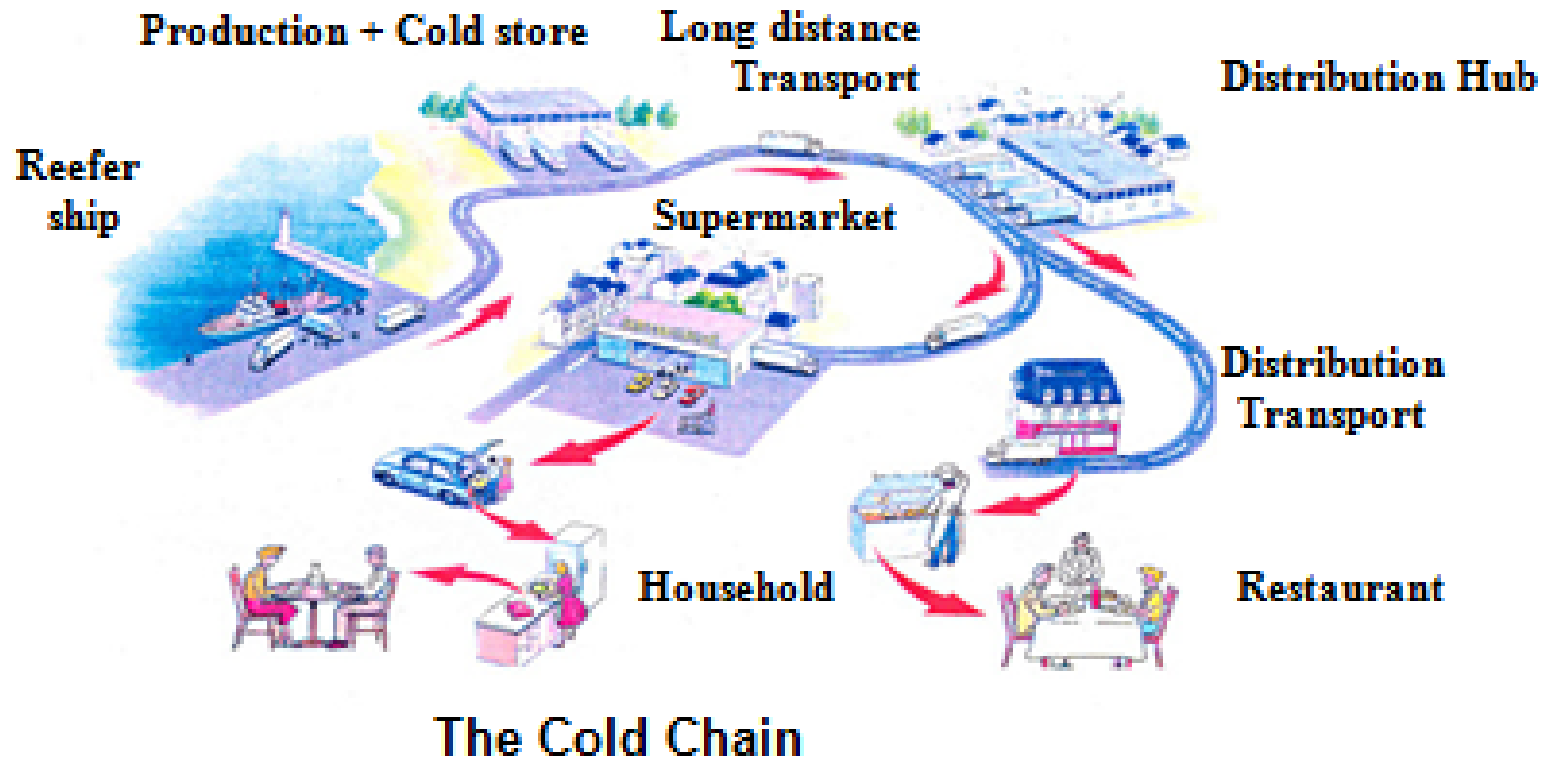
Obstacle #5 – Climate Change

“Climate is what we expect. Weather is what we get.” – Mark Twain

- Extreme climate change or weather (whichever you call it) will disrupt the global supply chain
- Floods, wildfires, heat waves, droughts, power outages, etc.



“Regular” Cold Chain Transport Will Expand to Automotive Given Electronic Components



- Now imagine all of the electronics in a heat wave and what we will need

Obstacle #6 – Geopolitical

“I said, war, huh (good God, y’all)

What is it good for?

Absolutely nothing, just say it again.” – **Edwin Star**

Certainly, nothing in the supply chain . . .

- 2.5 *Current* issues:
 - Russia/Ukraine
 - Middle East – Israel/Hamas
 - ½ = China
- How wars will affect the global supply chains (beyond humanity):
 - Tariffs and economic sanctions (est 2018 and still here)
 - Actual disruptions to continuity of supply
 - Shortages
 - Surging energy costs
 - Rising freight costs

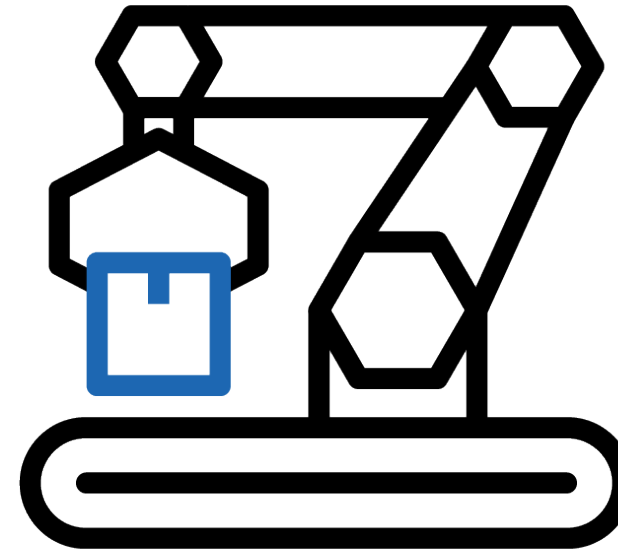
Pricing Disputes

- Pressures are boiling over in the supply chain
- Unprecedented pricing disputes even under fixed price “requirements contracts”
- Everyone gets in line...
- How can these escalate?
 - Stop-Ship Threats
 - Breach of Contract Notices
 - Payment Under Protest with Reservation of Rights
 - Breach of Contract Claims or Setoffs
 - Emergency Temporary Restraining Orders/Preliminary Injunctions



Outlook

- Opportunity for manufacturers to reexamine their commercial contracts
 - Increased focus on supply chains and related planning
 - Never waste a good crisis
 - Monitor litigation trends around supply chain disputes (where have you already agreed to be sued?)
 - Look at shifting risk by reexamining contracts and making changes going forward
 - Look at long-term strategies for reducing risk in the global supply chain





Overview of Key Legal Theories & Injunctions

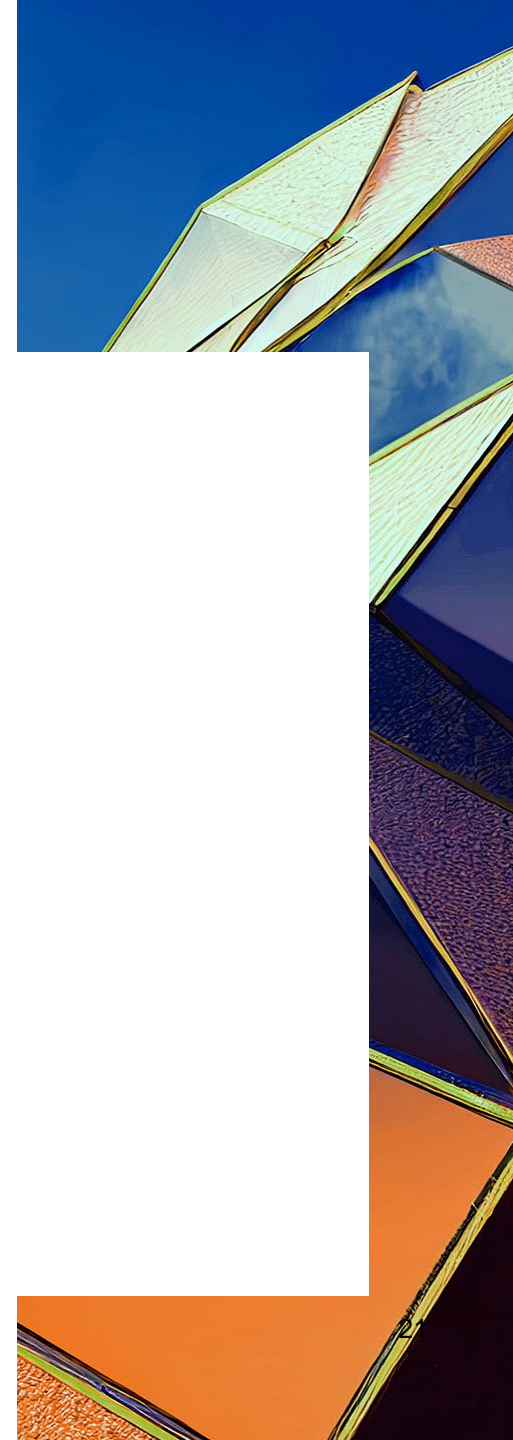
Three Key Legal Theories

- These excuse performance under a contract; not in breach
 - *Force majeure*
 - First line of defense for unexpected supply issues—delivery prevented or delayed, raw materials unavailable, etc.
 - Performance is excused during the pendency of the force majeure event
 - Commercial impracticability
 - Backstop if force majeure provision is nonexistent or inapplicable
 - This is the proper “door” for the price increase requests (demands) that we are seeing
 - Show that performance has been rendered commercially impracticable by the occurrence of a contingency the non-occurrence of which was a basic assumption on which the contract was made (UCC 2-615)
 - Frustration of purpose
 - Excuses non-performance when the purpose for entering into the contract is impeded by an unforeseen event
 - Nonoccurrence of the event was a basis for the contract
 - Common example: the object of the contract is destroyed

Equitable Relief

- Four elements necessary to obtain injunctive relief:
 1. Likelihood of success on the merits
 2. Irreparable harm
 3. Balance of the harms
 4. Public policy/interest

- Majority of commercial/supply chain disputes turn on the first and second elements
 - Although in case trends, you will see judges will give weight to elements three and four to obtain the desired outcome





What You Should Be Doing About These Things Now

What You Should Be Doing Now

- Not rules and not one-size fits all
- These are suggestions that need to be customized



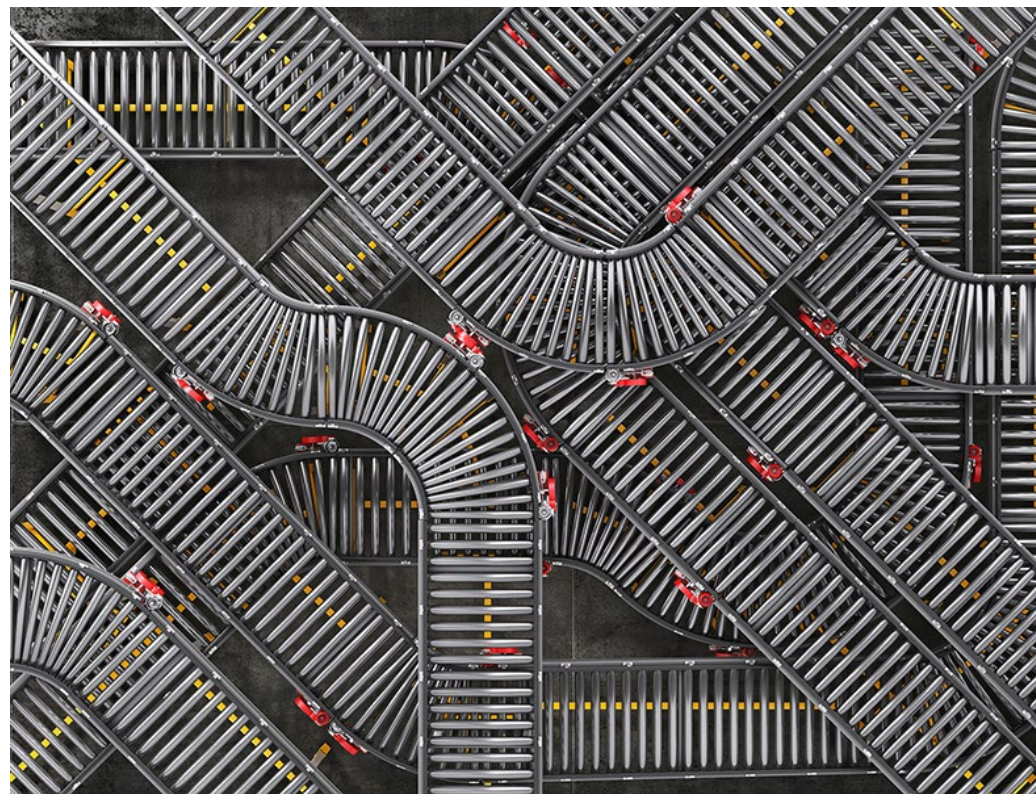
Suggestion #1

- Engage in a supply-chain mapping exercise and identify past issues (do not begin with COVID-19)



“Those that fail to learn from history are doomed to repeat it.” – Winston Churchill

- Know your company’s supply chain and pain points
 - The who, what, where, and how far away
 - Labor force
 - Freight & logistics
 - 3PL
 - Tracking technology and transparency
- Look beyond one tier below
 - Ex. What if both of your suppliers have the same raw material supplier?
- Important for both short- and long-term precautions



Suggestion #2

- Revisit T&Cs and rewrite the *force majeure* provisions (plural!)



Force Majeure



KEY CONSIDERATIONS

For Buyers

- List specific events as narrowly as possible
- Exclude labor strikes
- Build-in prompt notice requirement and expected duration
- Shorten time to resume performance
- Need an “out” (*escape hatch* provision): right to terminate after certain time period



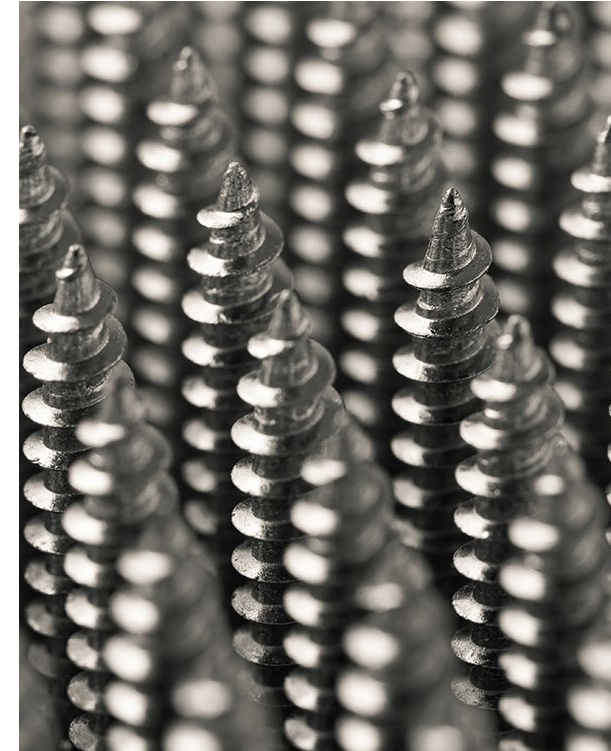
KEY CONSIDERATIONS

For Sellers

- Negotiate as broad of a list as possible
- Catch-all: “. . . or any other circumstance beyond the control of the parties” (very broad)
- Suspend performance until the force majeure event is over

Suggestion #3

- Consider allocating certain risks and fluctuations through the contract (whether a new agreement, an amendment, or at the time of renegotiation)
 - Indexing or price-shifting provisions for raw material increases
 - Indexing or price-shifting provisions for labor rate increases
 - Indexing or price-shifting provisions for freight increases
 - Provisions addressing expedited freight costs and which party bears responsibility under what circumstances
 - Volume targets



Fresh Look at Commercial Contracts

- Can and should consider how to allocate risk under the contract
- Consider risk assessment for existing Long Term Agreements (**LTAs**) and strategic suppliers
- Mandatory arbitration provisions with escalating dispute resolution clause
- Consider past issues, disputes, stop-ship threats, line downs, etc.
- Expect to see more indexing, hedging, thresholds, etc.



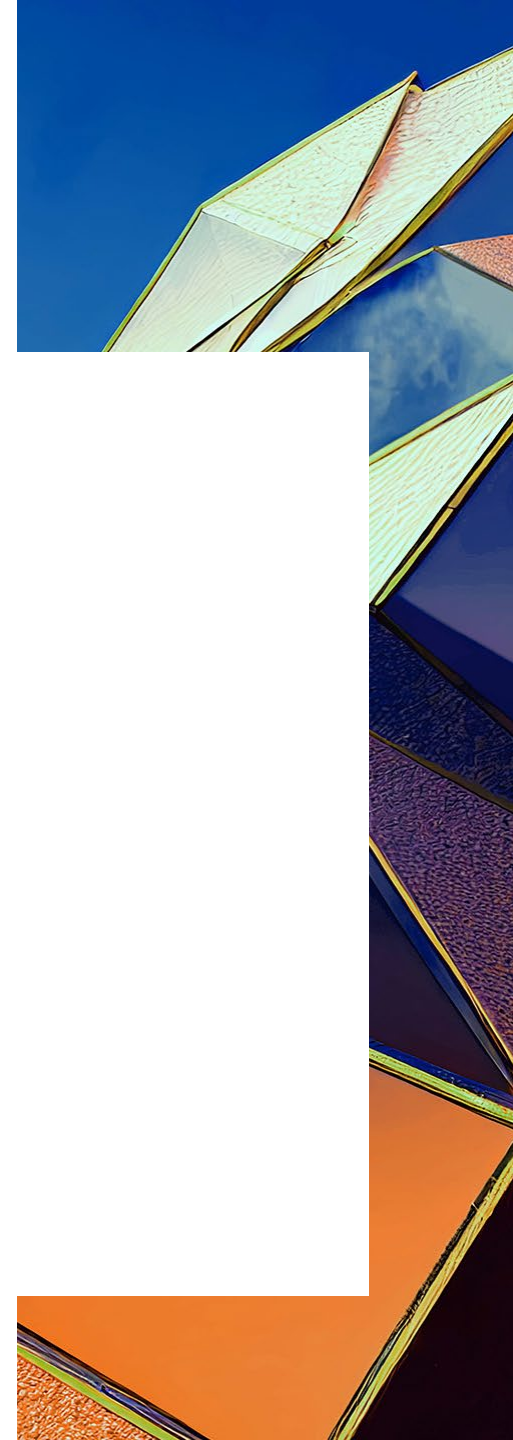
Suggestion #4

- Be on the Lookout for Troubled Supplier and Troubled Customer Red Flags



Managing Financially Troubled Suppliers, Vendors and Customers

- Warning signs
 - Missed, late, frequent expedites, or short shipments (or payments)
 - Low-quality shipments
 - Unprofitable operations (delay of new program launches)
 - Failure to pay sub-tiers/stretched payables
 - Requests to change payment terms
 - Sudden or frequent changes in management or key personnel



Managing Financially Troubled Suppliers, Vendors and Customers

- Assemble cross-functional team, including purchasing/sales, operations, treasury, and legal
- Consider an exit strategy
 - Suppliers – availability of alternative sources of supply
 - Customer – Desirability of continued relationship
- Meet with the supplier/customer and supplier's lender(s)
- Involve end customers
- Determine course of action
 - Is supplier viable?
 - Cost-benefit analysis of resourcing vs. staying the course

Managing Financially Troubled Suppliers, Vendors and Customers

- If forced to stay:
 - Document any accommodations and the expectation in return for those accommodations
 - Supplier's commitment to continue production
 - Lender's commitment to continue lending
 - Establish milestones to gauge performance
 - Acknowledge ownership of any tooling or company property in the supplier's possession

Suggestion #5

- Consider fundamental changes to JIT, lean manufacturing model with sole-sourced supplier



Try to Avoid Some of the Problems with JIT

- Not possible across all components, raw materials, and operations
- But there are some parts and raw materials that can be:
 - Dual-sourced (and from different locations)
 - Warehoused or stockpiled in some quantity
 - Request safety stock to be held by suppliers
 - At least have a prequalified alternate source ready



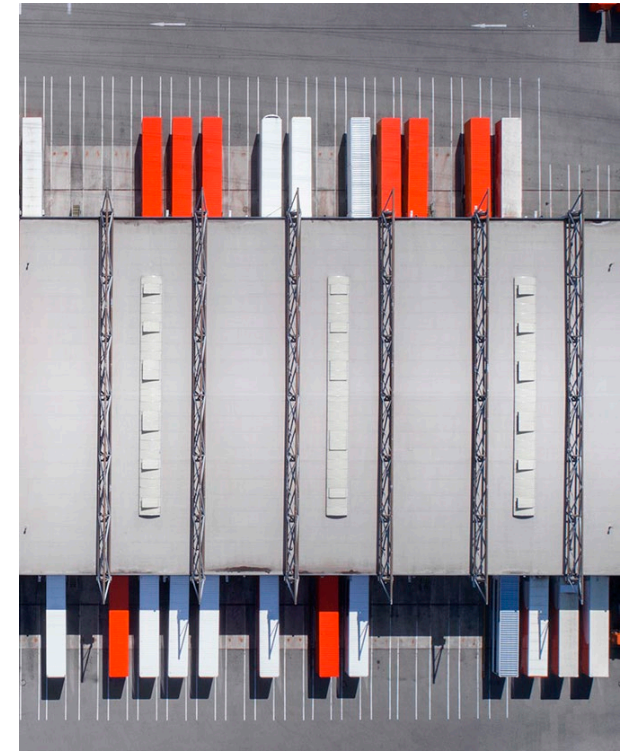
Suggestion #6

- Consider fundamental changes to the length/distance of the supply chain

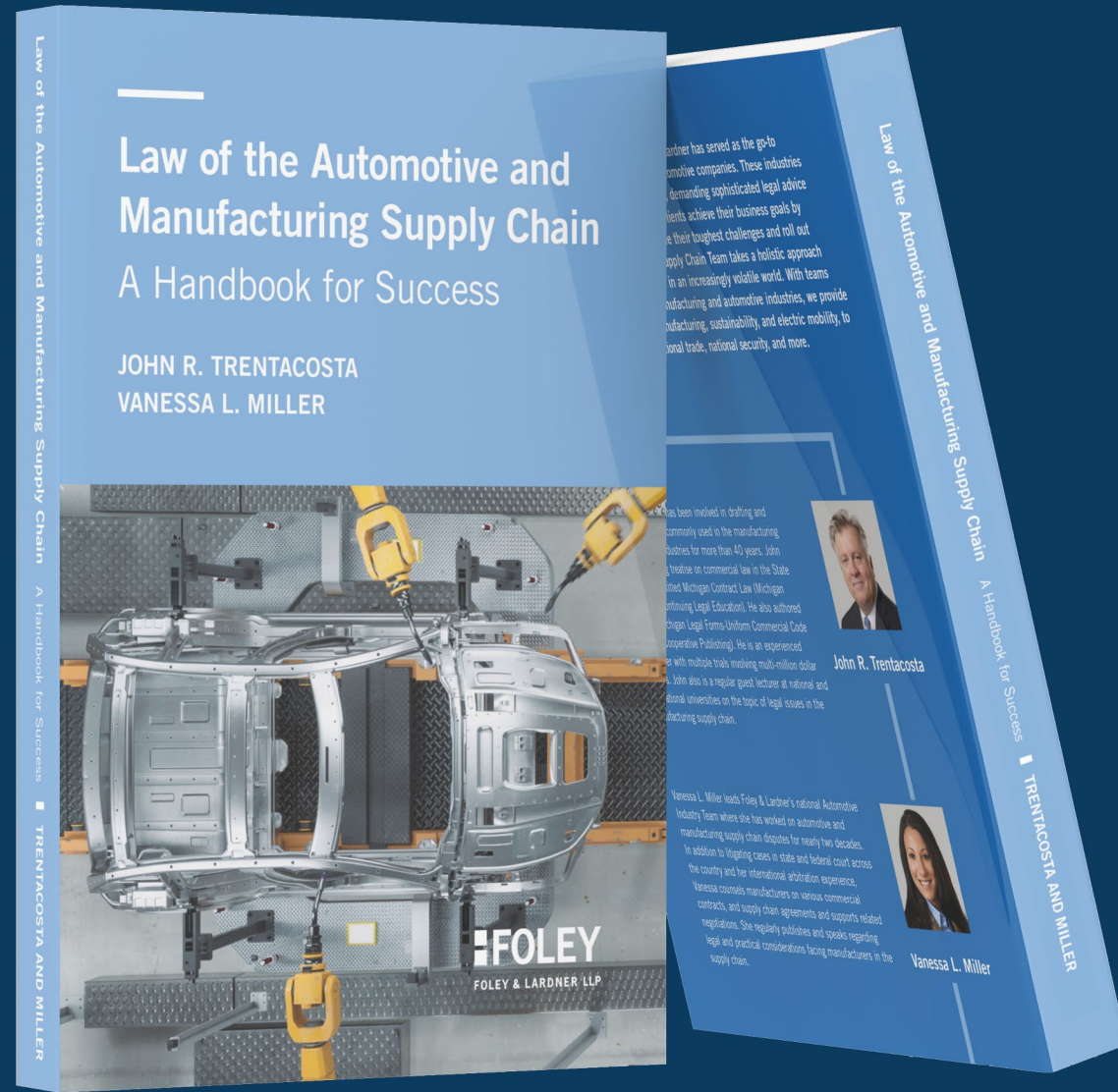


Reshoring/Nearshoring/Regionalization

- Easier said than done
- Long-term strategy (though finally beginning in Mexico)
- Many companies are taking steps to:
 - Source certain supplies and operations “closer”
 - In-house certain parts and functions
 - Acquire production facilities or enter into JVs
 - Ex. microchips and batteries



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