



RISKVIEW

# THE RISKY WORLD OF SUPPLY CHAINS

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# ARE WE TAKING SUPPLY CHAIN FOR GRANTED?

Global supply chains have significantly improved the lives of so many people around the world. As the global economy continues to grow, more and more people are becoming reliant on the global supply chains, especially consumer goods companies.

Supply chain itself is a system that has been around for more than a century. From making sure the troops got enough food in a war until assuring you could find something for breakfast in the shelves of your favorite supermarket this morning, supply chain is such a crucial system that affects our lives like nothing else does.

This edition of RiskView magazine will provide the very basics of supply chain management, how new technologies are being used in supply chains, the risks which are inherent with supply chain, and the imminent need of a good supply chain risk management.

# TABLE OF CONTENTS

**1** ARE WE TAKING SUPPLY CHAIN FOR GRANTED?

**10** THE TECHNOLOGIES SHAPING MODERN SUPPLY CHAINS

**20** REINVENTING SUPPLY CHAIN : INCORPORATING SUSTAINABILITY

**4** UNDERSTANDING SUPPLY CHAIN

**12** PUTTING BIG DATA IN BIG SUPPLY CHAINS

**23** BRAND ON FIRE: CHIPOTLE IN SUPPLY CHAIN BATTLE

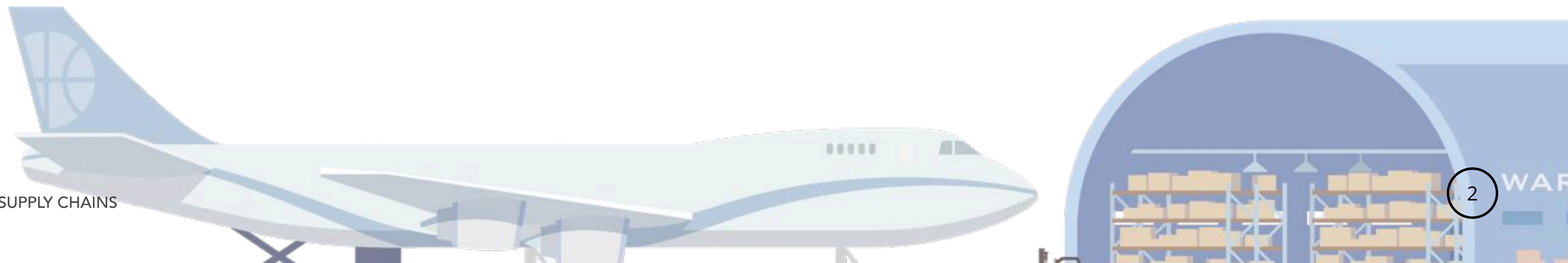
**6** EVOLUTION OF SUPPLY CHAIN STRUCTURE

**14** A CONTINUOUS SUPPLY OF RISKS IN GLOBAL SUPPLY CHAIN

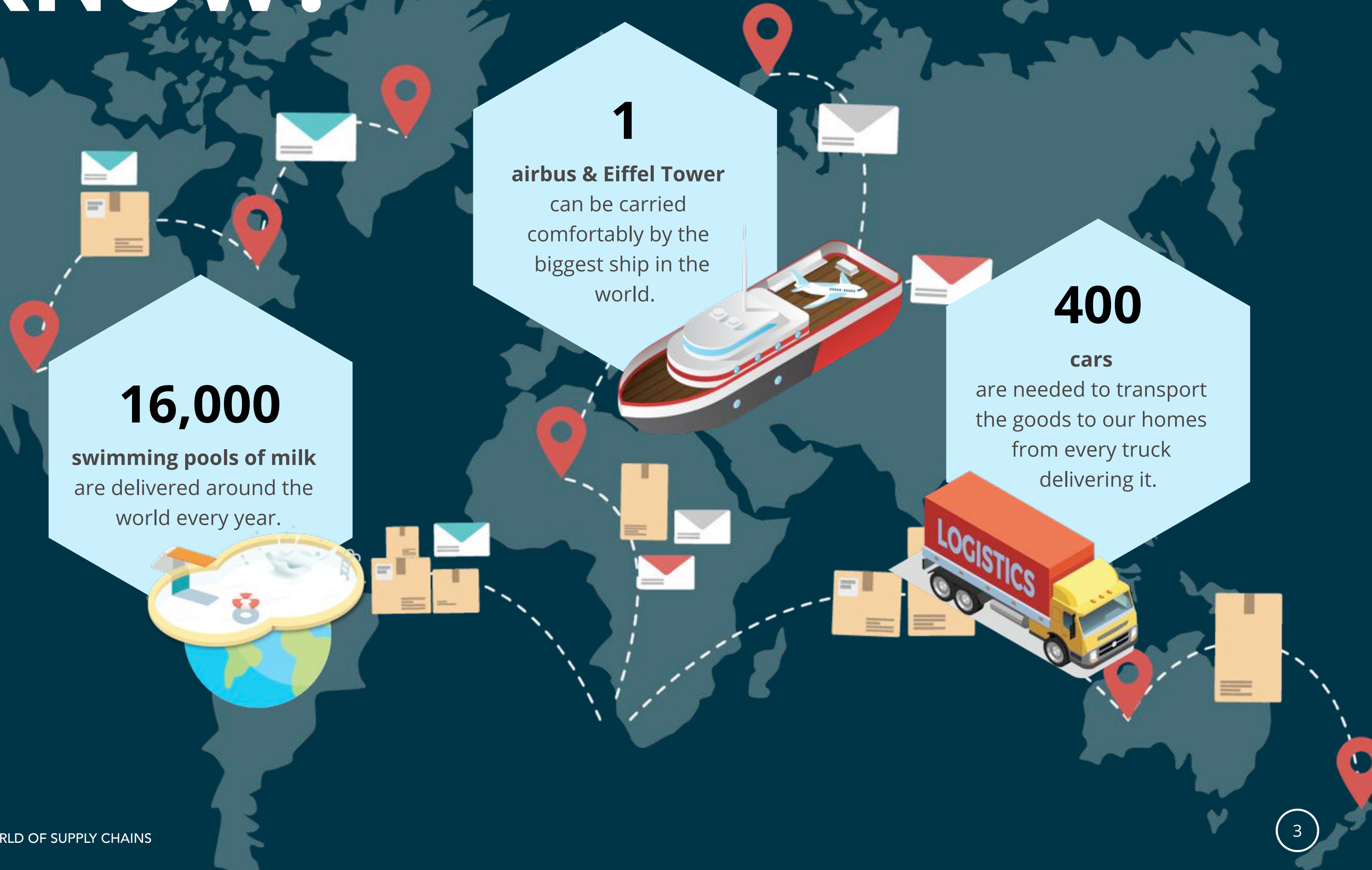
**26** THE FUTURE OF SUPPLY CHAIN

**9** 5 MAJOR DECISIONS IN SUPPLY CHAIN

**16** TOP RISKS IN SUPPLY CHAIN



# DID YOU KNOW?



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# UNDERSTANDING SUPPLY CHAIN

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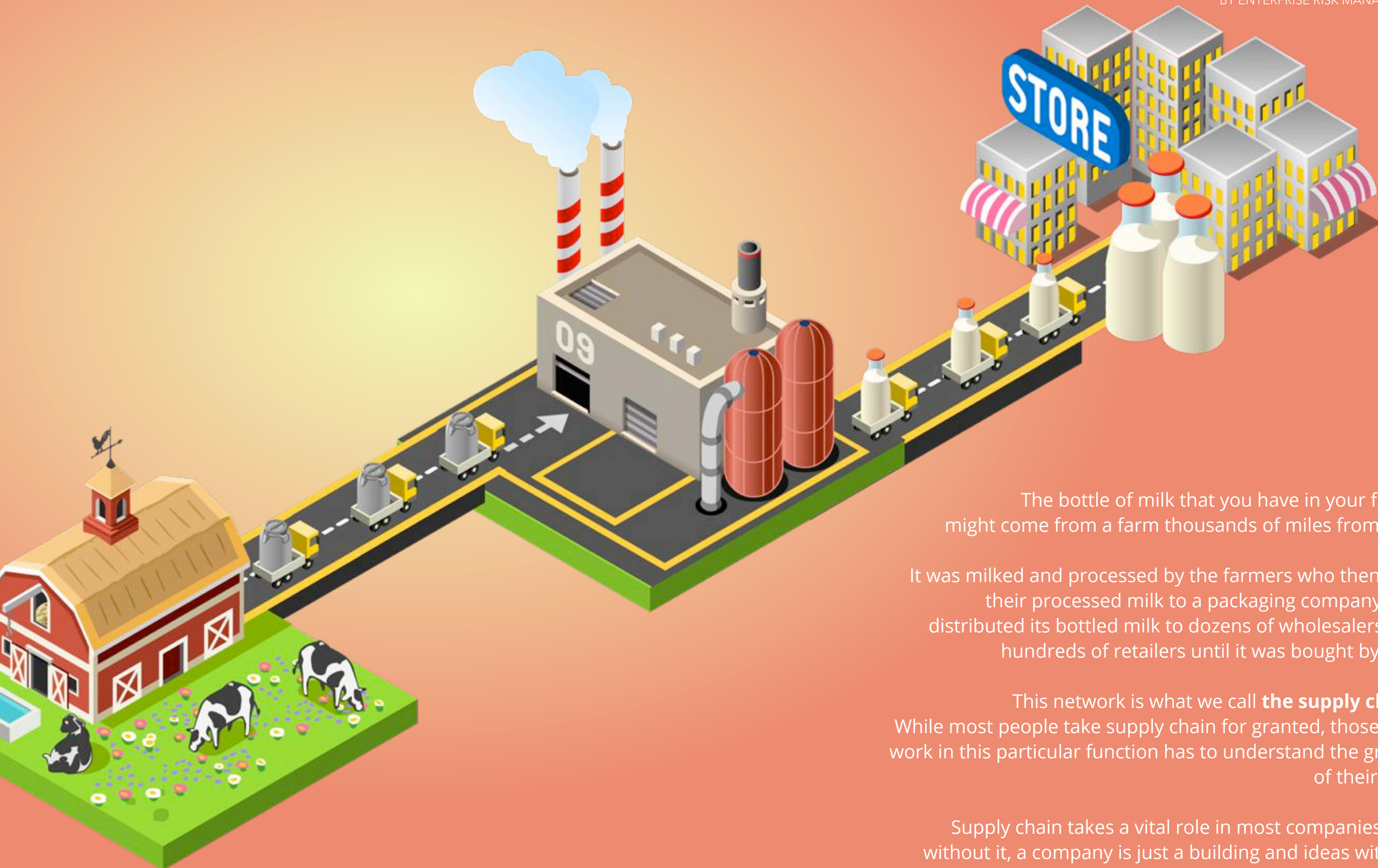
Imagine yourself waking up one morning only to find that you're out of milk.

You went out to the convenience store near your house, but still, it was out of sight. The same thing happened after you walk a few blocks to see if the supermarket had any milk.



## WHERE IS THE MILK?

To understand how this could happen, we need to understand that the availability of the milk (or any product, for that matter) does not pop out of nowhere. It pops from a very systematic process called **the supply chain**.



The bottle of milk that you have in your fridge might come from a farm thousands of miles from you.

It was milked and processed by the farmers who then sold their processed milk to a packaging company that distributed its bottled milk to dozens of wholesalers and hundreds of retailers until it was bought by you.

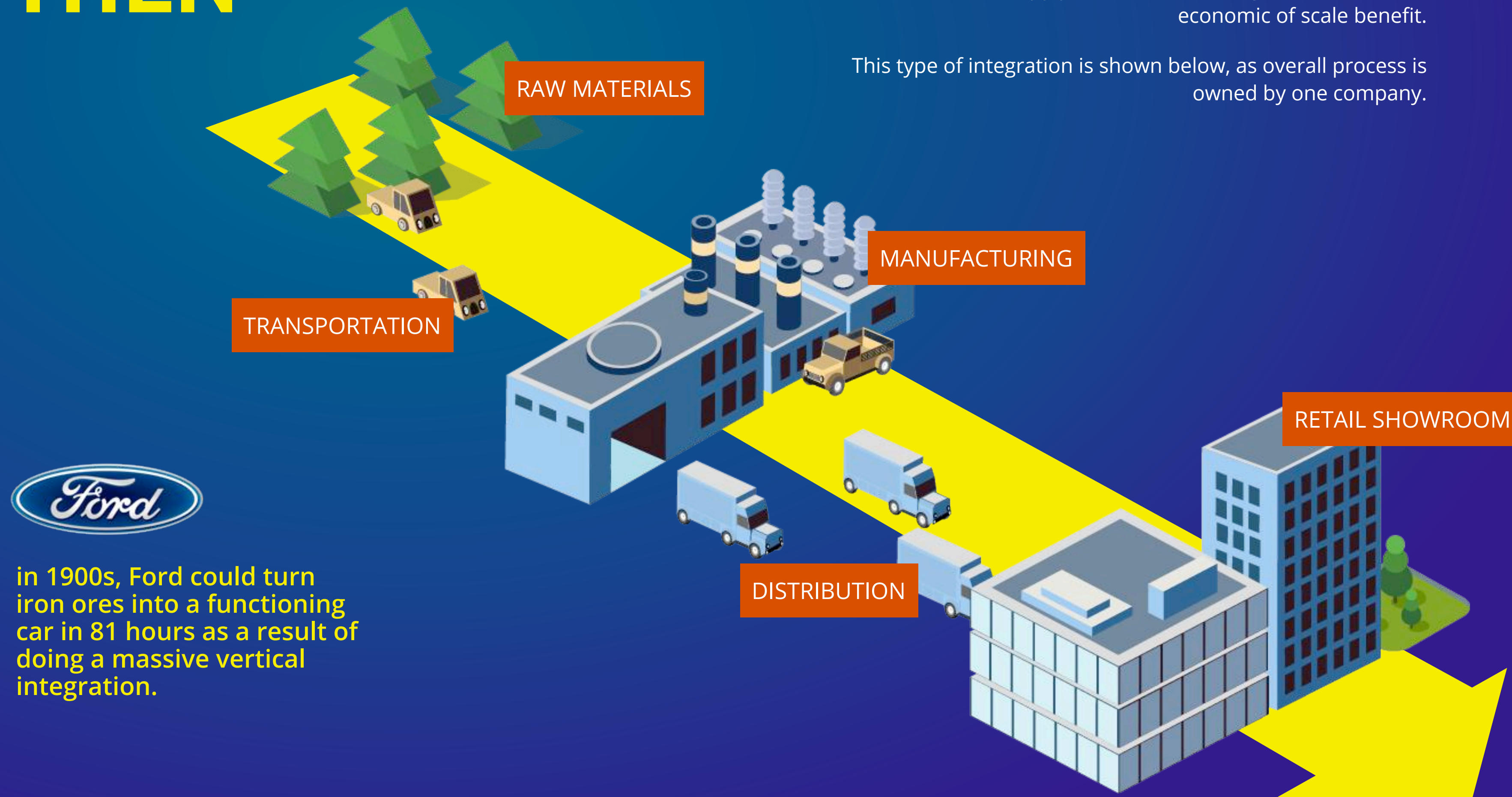
This network is what we call **the supply chain**. While most people take supply chain for granted, those who work in this particular function has to understand the gravity of their role.

Supply chain takes a vital role in most companies that without it, a company is just a building and ideas without capabilities to produce or distribute.

# EVOLUTION OF SUPPLY CHAIN STRUCTURE: **THEN**

In the industrial age, it was common for large companies to own much of their supply chain (vertical integration) to achieve economic of scale benefit.

This type of integration is shown below, as overall process is owned by one company.

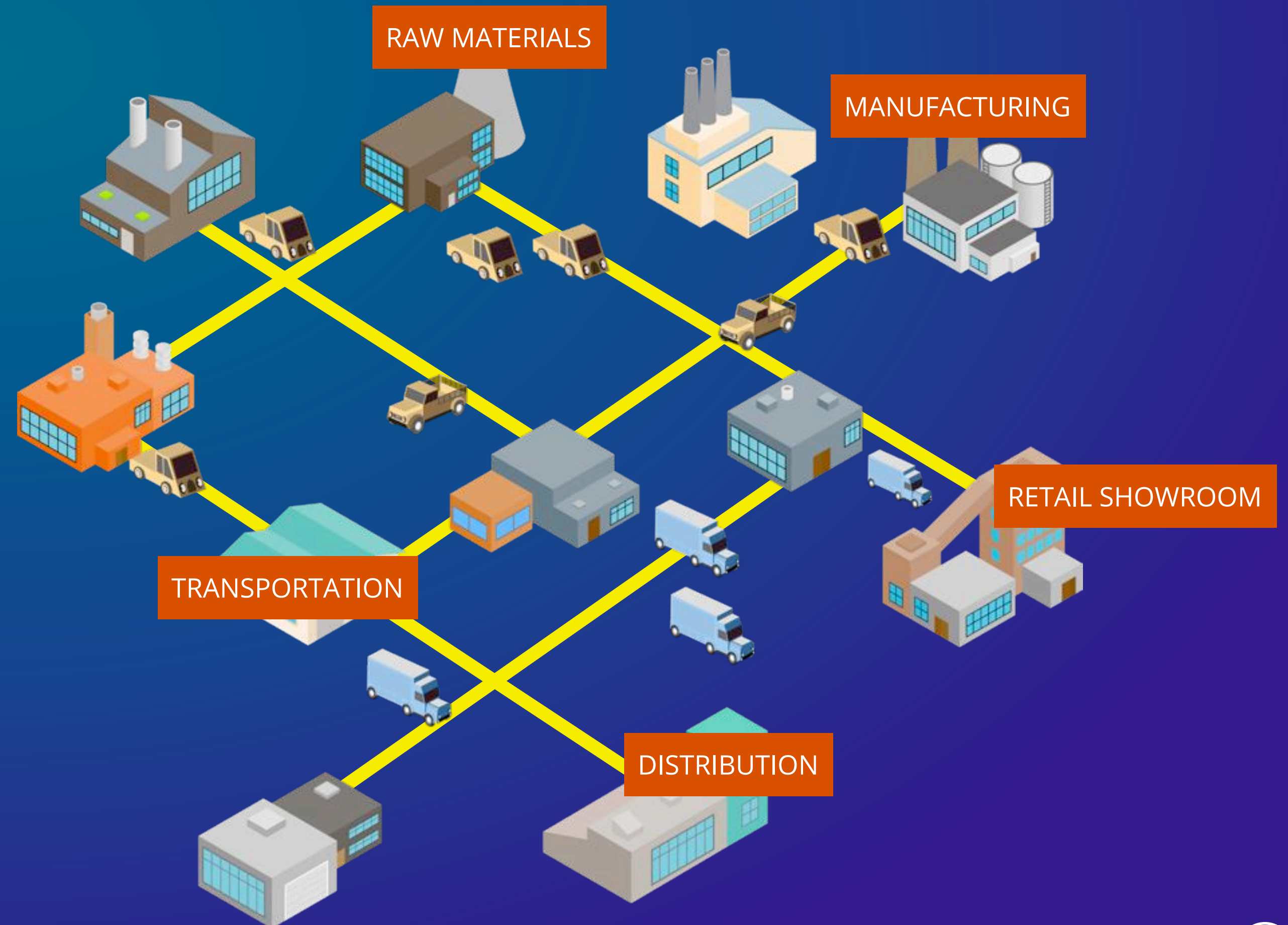


in 1900s, Ford could turn iron ores into a functioning car in 81 hours as a result of doing a massive vertical integration.

# EVOLUTION OF SUPPLY CHAIN STRUCTURE: **NOW**

However, it eventually failed since it only served the mass market and became totally unfriendly to customers' preferences.

In the present, supply chain is a network of companies that are working together to target fragmented, fast-moving markets.



Ford's vertical integration approach showed its limitation and inflexibility. Ford's market share was reduced by more than 30% from 1920s - 1940s.





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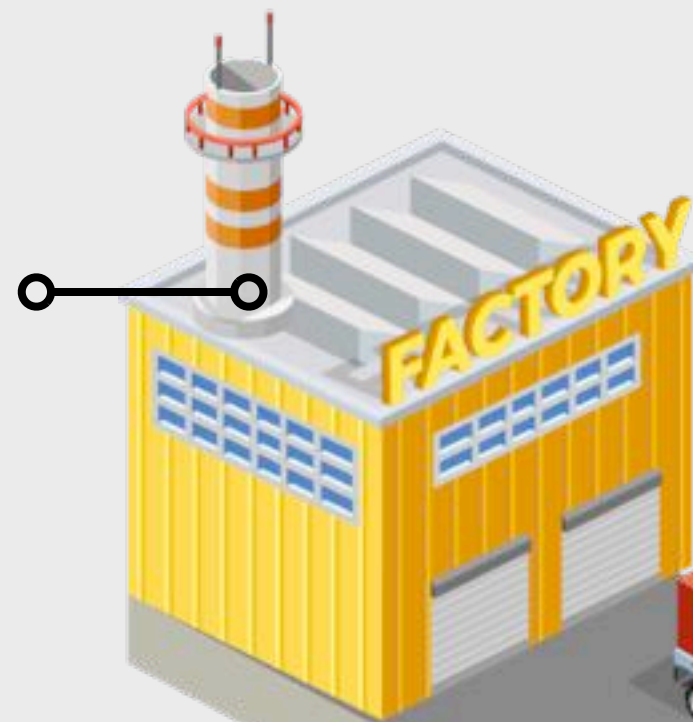


# 5 MAJOR DECISIONS IN SUPPLY CHAIN

There is a basic pattern in supply chain management which calls companies to make decisions individually yet collectively in these five supply chain drivers.

## PRODUCTION

*What products does the market want?*



## LOCATION

*Where should facilities for production and inventory storage be located?*



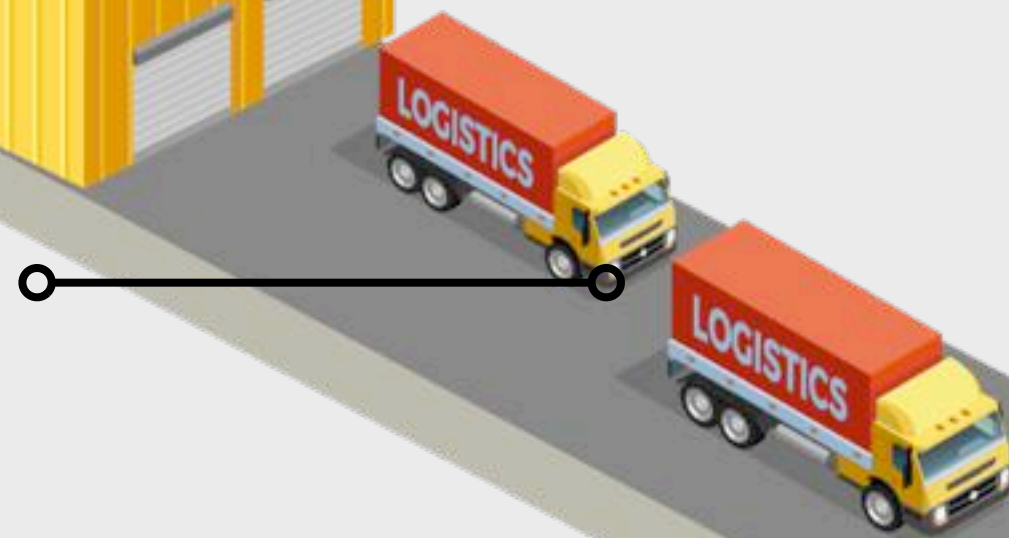
## INFORMATION

*How much data should be collected and how much information should be shared?*



## TRANSPORTATION

*How should inventory be moved from one supply chain location to another?*



## INVENTORY

*What and how many inventories should be stocked at each stage of a supply chain?*



# THE TECHNOLOGIES SHAPING MODERN SUPPLY CHAINS

Only a few decades ago, supply chain was an extremely labor-intensive process. Today, technology seems to be embedded naturally in the process, adding significant improvements in supply chain efficiency and effectiveness.

Below are the examples of such technologies—the ones that we benefit from every single day.

## Geographical Positioning System (GPS)

*GPS tracks objects accurately with the help of satellites. Once the position of the object is known, it can be transmitted through the transmission network i.e. mobile phones or the Internet.*

The use of GPS is very flexible. For instance, GPS can provide supervisors with a detailed monitor on whether a truck is on course or whether it might be delayed due to any reason, which is then used to make appropriate adjustments. Further, GPS can also help supervisors to manage and track items which are vulnerable to theft, leading to the implementation of effective supervisions or assist mitigation actions.



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# THE TECHNOLOGIES SHAPING MODERN SUPPLY CHAINS

## Automated Guided Vehicle System (AGVS)

AGVS system makes use of magnetic or optical guidance system to guide material handling process. If coupled with AGVS, robots are able to pick up the exact material requirement for customer orders.

## Radio Frequency Identification (RFID)

RFID-based systems provide companies with non-contact reading and are effective in an environment where bar codes could not be implemented. These communicate inventory data to the reader via radio waves.

## Automated Inventory Tracking System (AITS)

The AITS is an IT tool that gives a real-time status of the inventory levels of all the items to supply chain actors. For replenishment of items sold, information is conveyed directly to the suppliers after the inventory level touches certain point.

## Enterprise Resource Planning (ERP)

ERP is an integrated software that encompasses all the business operations and brings about significant change in companies' activities. ERP is a very expensive and complex exercise which require sufficient amount of planning.

ERP helps in optimization of supply chain management and develop competitiveness by: quicker response to customer requirement, reduction in inventory costs, improvement in service levels, improvement in inventory turnover rate, reduction in logistics cost, etc.

# PUTTING BIG DATA IN BIG SUPPLY CHAINS

Previously, understanding and interpreting Big Data was considered a tedious task. However, with rapidly evolving information architectures, the process of analyzing Big Data has drastically simplified.

Below are the examples of how Big Data has influenced Supply Chain Management Practices.

## Delivery Route Optimization

With the existence of Big Data, automation of delivery routes could be implemented. The optimization of this automation is believed to save cost by 30%.

## Package Movement Monitoring

Big Data has made it possible for companies to implement real-time tracking. This has improved the operational proficiency of the companies by accurate estimated time of arrival calculation, predictive route optimization, real-time tracking and notifications, etc.



## E-commerce and Crowdsourced Logistic

Big Data analytics has helped E-commerce companies to self-pick-up crowdsource inventory and drop counters for customers in central locations of major cities, thus simplifying the logistics process.

## On Ground Resource Management

Big Data analytics enables the management to track and analyze the resources deployed in real time. This technology has drastically improved resource allocation, enhanced efficiency, improved productivity and decreased costs.

## Real-Time Notifications for Customers

With the adoption of real-time tracking, customers have increased interest in knowing everything. This level of transparency is often lead customers to increase their loyalty towards a brand.



# A CONTINUOUS SUPPLY OF RISKS IN GLOBAL SUPPLY CHAINS

The advancements that paved the way for global supply chains have created both opportunities and risks. While the opportunities are enormous and have created direct impacts in our modern lives, the risks are vast and most of the times, unanticipated.

According to the CIPS Risk Index compiled by Dun & Bradstreet, global supply chain risk grew to a record high at the end of 2016 as to 82.64 from 79.14 at the end of 2015.



Let's take Brexit for example, nobody knows what will the impact be on supply chains when goods can't move as freely as before, and how will this directly impact the UK once they leave the free-trade area. Amid these uncertainties, we are starting to see how all these are taking shape. According to Sky News, prices of goods in the UK in March 2017 have risen at an annual rate of more than 3.3%, compared to the annual rate of less than 1% before the referendum. How should companies with supply chains exposed to the UK react to this?

With no guidance and no answers to look to, companies tend to be unprepared for the impacts, and create an imminent and real danger to global supply chains. The impacts of these risk have consequences that affect numerous corporate function, including operations, manufacturing, purchasing, logistics, inventory, etc.

With risks coming from 360 degrees, companies need to keep their supply chain not only fast and cost-efficient, but also responsive to change, so that it can survive even in the face of the most unexpected risk event.





# TOP RISKS IN SUPPLY CHAIN

Based on Allianz 5th Risk Barometer Report, supply chain disruption has taken #1 place in top business risks faced by companies around the world for 4 years consecutively since 2012. This not only shows the volatile nature of it, but also shows just how important supply chain is in the overall business process.

Here are top three supply chain risks (by perceived impact) listed in the report:

<b>51%</b>	<b>46%</b>	<b>32%</b>
Natural Catastrophe	Fire & Explosion	Supplier Value

Moreover, while supply chain disruption can have a 7% impact on stakeholder value (with an even bigger percentage in brand reputation), the intention to managing it is still lacking.

This is shown in a survey done by GT Nexus and YouGov on 250 senior US manufacturing executives last year, which found:

**76%**  
of the respondents don't have a  
Chief Supply Chain Officer in place.

**38%**  
of the respondents believe that their  
supply chain will not be impacted by  
technology.

NATURE IN ACTION

# THE EYJAFJALLAJÖKULL ERUPTION

A stylized illustration of the Eyjafjallajökull volcano erupting. The volcano is depicted with a dark brown peak and a large, billowing white ash plume that rises into the sky. The foreground shows the volcano's slopes in shades of orange and yellow, suggesting molten lava or ash. The background is a solid dark grey.

In 2010, the Eyjafjallajökull in Iceland erupted. Although the eruption was relatively small, the effects were enormous. Over a period of over a week, the eruption caused massive disruption across western and northern Europe.

- > **100,000 flights cancelled over 8 days**
- > **Fresh food imports stopped**
- > **Local water supplies were contaminated.**

# DID YOU KNOW?

**300**

**tons of material** can be carried by the biggest lorry in the world.



**26th**

**largest economy** would be Walmart's position if it was a country.



## IT STARTS FROM THE TOP.

A healthy risk culture will provide the whole organization a stake in risk management.

It starts at the top, with the risk leadership from the board of directors and senior management, and requires commitment and involvement across the entire organization.



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# REINVENTING SUPPLY CHAIN: INCORPORATING SUSTAINABILITY



While supply chain inarguably has an enormous positive impact on our lives, our dependency on it has also taken a toll on sustainability. The convenience of getting anything we want has led us to a more consumptive behavior—we now include more things into our weekly shopping cart, probably even add some items we don't really need.

This behavior collectively contributes to the need for a faster, more intense supply chain. However, many of these activities are conducted in unsustainable practices, most of which are way too familiar for us.

Without responsible practices, supply chain could become a long-term disease. Moreover, the wide scope of supply chain will make its impact truly severe.

Sure, companies throughout the world have tried to conduct responsible supply chain in the recent years. They have been trying harder to meet legal requirements and stay within ethical standards.

However, is this  
“legal and ethical supply chain” enough?

Despite the increasing awareness of responsible supply chain based on a survey by EY in 2016, a recent review of 2,555 supply chain metrics found that none of those metrics explicitly address sustainability context. Another review states that only 5% of approximately 40,000 corporate responsibility reports examined refers to ecological limits.



The fact is, operating a legally and ethically responsible supply chain hardly represents a sustainable supply chain.

This is why leading companies with higher maturity level are starting to expand their relationship with supplier significantly, moving beyond auditing and monitoring to investing on training and capacity building. Some also actively engage with nonprofit organizations (NGOs) to maintain awareness of sustainability issues or trends that will impact the supply chain.

Seeing sustainability as more than just a compliance to assure license to operate should be all companies' business. After all, following the rise of eco-conscious consumers, we see more and more companies held accountable for actions deep in their supply chains—it is simply too risky to risk sustainability.

Based on UNICEF & Sustainability Consortium  
2016 Impact Report, supply chain activities  
were held accountable for:

**150,000,000**

CHILD  
LABORS

**60%**

OF ALL  
GREENHOUSE  
GASSES

**2/3**

OF TROPICAL  
FOREST LOSS

**80%**

OF WATER  
USAGE





# BRAND ON FIRE

## CHIPOTLE IN SUPPLY CHAIN BATTLE

In late 2015 to early 2016, Chipotle experienced 6 foodborne illness outbreaks in 14 states. In total, 514 people reported sickness, and it is estimated to be only 10% of the total victim.

### How did this happen?



The graphic below highlights 3 major problems that exposed Chipotle to this crisis.

### HUGE NUMBER OF SUPPLIERS WITHOUT STANDARDIZATION

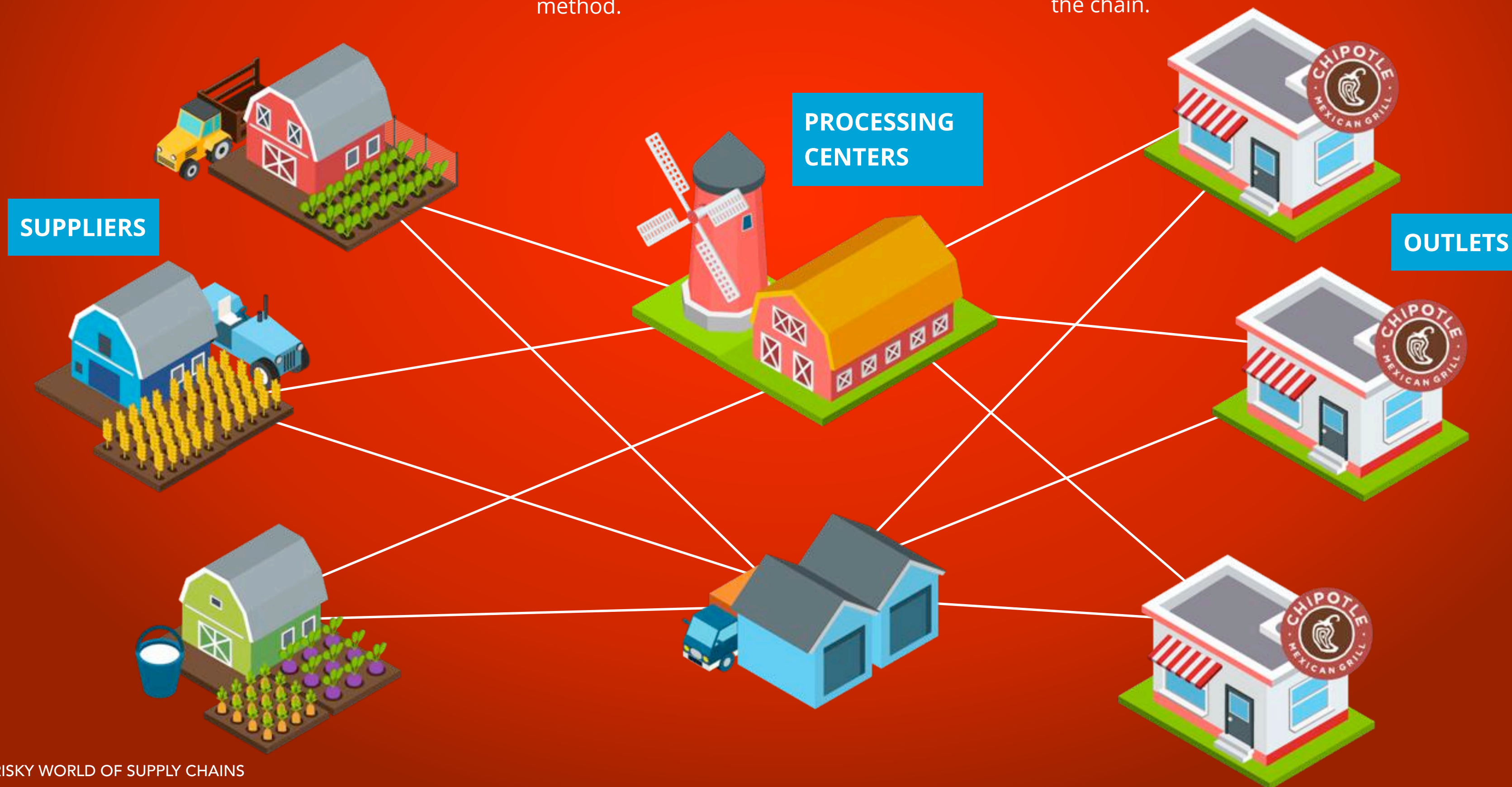
With a total of more than 2,000 suppliers, the lack of standardization in processing made Chipotle prone to outbreaks.

### DECENTRALIZED SCM IN PROCUREMENT & PROCESSING

This means raw materials and processes might have slight differences from one place to another, as some places have their own traditional procuring and cooking method.

### CONTAMINATION IS NOT DETECTABLE

With a wide variety of ingredients and high number of suppliers involved in the chain, it became hard for Chipotle to locate the source of contamination from the end of the chain.



# THE DIRECT IMPACTS

## 40%

DECREASE  
of stock price\*

## 30%

DECREASE  
of sales in a month\*

## 44%

DECREASE  
of profit\*

## Quarterly Sales Decrease

first in 10 years\*

\*data in 4th quarter of 2015

## What Chipotle did to deal with the problem?

- Implemented DNA-based raw material screening for every supplier
- Built a central kitchen to standardize the cooking process
- Dealt with litigation problems
- Started huge marketing campaigns to recover its reputation



## LESSON LEARNED

In this case study, Chipotle failed to implement that particular concept by not giving sufficient focus on the suppliers. While decentralization might increase its supply chain flexibility, it also brings a huge risk regarding the quality level of the material without proper standardization as a risk control.

Despite its ability to survive through its quick, responsive crisis management, this isn't a victory. Chipotle might have won the battle—but not the war. Even with 240 new restaurants opened last year, its net income for the full year of 2016 sunk to \$22.9 million, or \$0.77 per diluted share, compared to net income of \$475.6 million, or \$15.10 per diluted share, for the prior year.

Imagine if Chipotle had implemented risk management throughout its supply chain, it surely wouldn't have experienced such crisis.

# THE FUTURE OF SUPPLY CHAIN

The very future of supply chain demands a strong commitment to make a difference and concrete contribution to fundamental issues such as global distribution of food, broader access to healthcare, or environmental sustainability.

With these new missions combined with all the technology advancements we have foreseen, supply chains are not only facing new possibilities but also new challenges and threats.

Behind the glitters offered by modernization, lies a new reality: risks don't have clear boundaries they once had. Thus, a solid, holistic risk management is not a bargain. Organizations need to embrace not only new opportunities but also inherent risks that come with them.

Staying still is not an option for supply chain professionals. Having the ability to integrate technology to supply chains is important, but a much stronger value will emerge from the ability to anticipate and capitalize on the kinds of trends we have discussed in this edition of RiskView.






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