Pluto7

REDUCE SUPPLY CHAIN DISRUPTIONS

A guide to minimize supply chain disruptions with rapid-response ML solutions built on Google Cloud

Content

PROBLEM : SUPPLY CHAIN DISRUPTIONS CAUSED BY COVID-19

Large enterprises usually build resilient supply chains to manage disruptions and balance growth with profitability. Typically, supply chain leaders have years or decades of know-how built into the supply chain process and systems.

Many times human judgements and expertise with scenario planning are embedded into business rules and ERP capabilities that run for decades. However, what would happen if the scenario you are facing happens to occur once in a century? What if your company never ran a simulation of this scenario in any form?

First and foremost, the current market landscape is increasing supply chain complexity. As physical supply chains extend their geographic scope, leaders need to leverage low-cost sourcing options and gain access to emerging markets. Additionally, the complexity is higher thanks to the changes in global regulatory compliances and changes in trade laws as different countries and alliance shape their trade agreements.

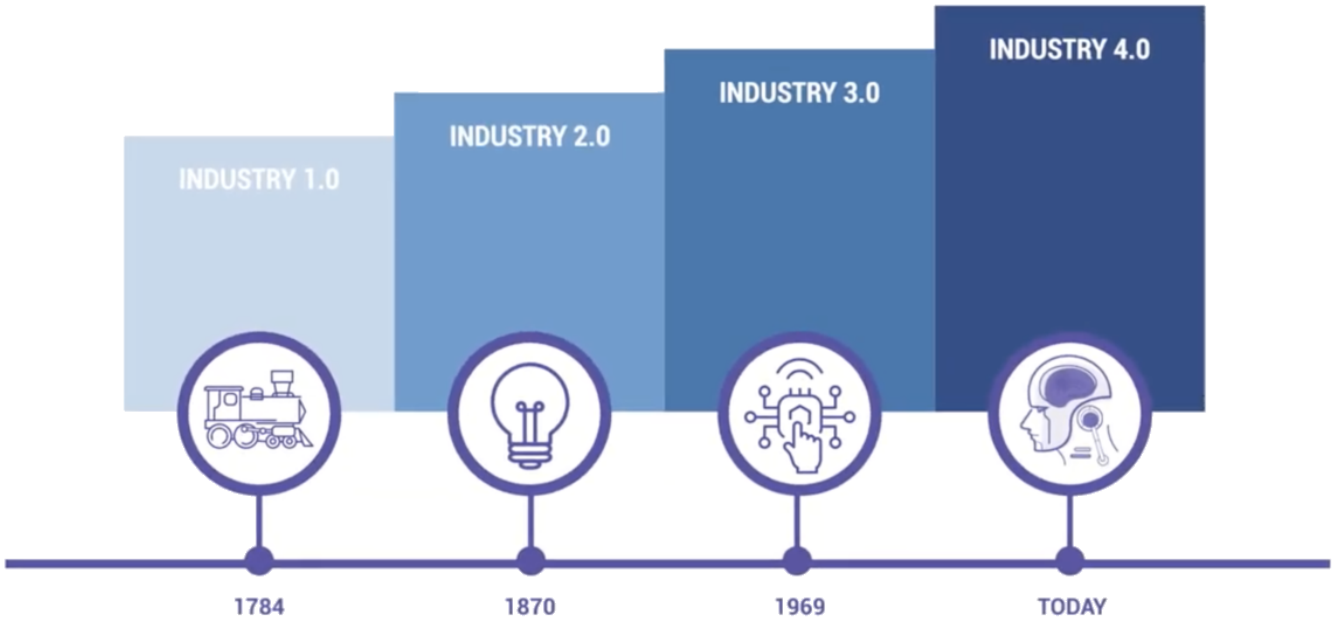
Today's organizations need to create better process and foster collaboration with their supply chain partners for improved supply chain effectiveness.

These are times to either make incremental or dramatic efforts to reduce business disruptions now and to handle similar situations better in the future.

At Pluto7, we engage with some of the Fortune-100 enterprises with the most complex supply chains in a multi-year AI journey. We help them enable the right technical and foundational capabilities to optimize ROI while accelerating a digital journey into the 4th industrial revolution. The terms like Manufacturing 4.0 or Industry 4.0 are starting to become a reality.

Within supply chains, a true assessment of how companies are currently managing disruptions will help the businesses combat at least some part of the problems generated by the pandemic outbreak.

What is more certain with COVID19 is that it has created multiple economic and financial ramifications from raw materials to finished goods. The most vulnerable companies are those heavily relying on factories operating in the impacted areas, producing spare parts apart from other finished goods.



Click here to watch video: "Factories of future"

Companies in retail, CPG, healthcare, hi-tech, and logistics are looking at scenarios which they have never faced before. Subsequently, leaders have to make a large number of complex decisions quickly.

Here are some key facts that generated unexpected disruptions in global supply chain due to COVID19:

- The typical organization usually has a major part of its finance tied to very few critical strategic suppliers.

- A modern supply chain is not linear involving a manufacturer which can suspend or resume production and instantaneously start delivering products, instead it is a complex web of entities in the value chain. At every node in the supply chain you need to worry about the demand, supply, costs, SLA and profitability internally and externally with your suppliers. COVID-19 has created a myriad of supply and demand problems.

- The conventional lean methodology for inventory replenishment, where a company maintains only enough stock in hand for a short duration is unable to adequately respond to tough situations such as the COVID-19 scenario.

In the past, mounting pressure to cut supply chain costs motivated companies to adopt lean manufacturing and outsourcing. This has backlashes in the current times of a global pandemic as Supply chain management needs agility more than ever.

Lean manufacturing concepts, JIT and TQM will continue to have a place, in which business continuity management and extreme scenarios become an essential part of supply chain planning and management.

When managing a supply chain, every leader knows that managing it is like leading a musical symphony with multiple instruments like demand forecasting, supply planning, excess management, shortage management, safety stock, delivery leads times, manufacturing lead line, quality, cost, labor and various other aspects. Each of these instruments needs optimization to get the right quality and level of output meeting SLA's across the value chain.

To optimize you need two things:

- **Visibility** across your entire supply chain. This means you need data insights from every step and stage of your supply chain process. Therefore, centralizing your data is more important now than ever. Google Cloud provides one avenue to centralize your data.
- The ability to make **rapid decisions** based on business real-time data and insights is crucial. Leaders can then be acted upon in near real-time and manage different situations across the world in many cases. The larger and more complex the supply chain, the higher the need for automated decision making. Automation becomes more critical during disruptive times so that more planning scenarios can be run at scale allowing machines to catch scenarios long before humans could. This kind of rapid scenario planning with centralized data leveraging statistical modeling and machine learning may appear new to the supply chain, but it has been used in the financial industry with stocks trading for decades.

CHALLENGE: A CONTROL TOWER VIEW OF YOUR CENTRALIZED DATA MAINTAINS STABILITY DURING SUPPLY CHAIN DISRUPTIONS

Supply chain operations need to take learnings from the pandemic outbreak to pave new ways for a comprehensive model that involves centralizing all internal and external data. The best strategy to overcome disruptions is represented by a Control Tower. Companies need an agile, digital supply chain to address customer needs more efficiently.

A supply chain "Control Tower" is a central hub with the required technology, organization and processes to capture and use supply chain data to provide enhanced visibility for faster decisions.

The primary idea is to deploy supply chain visibility tools that provide a line of sight to capacity constraints into first, second and third tier suppliers. The tools also facilitate automation of tracking and forecasting orders, demand forecasting, allocation and procurement, shipments status, sales order tracking, and service recommendation. All these components become a unified process when aligned with analytics, machine learning and Google Cloud capabilities.

The Control Tower also is like a risk evaluation tool which streamlines the supply chain by leveraging machine learning and cloud capabilities that helps find patterns to identify potential risks within socio economic, global health, geopolitical , exchange rate and other external data.

In the current situation or an unprecedented situation in future visibility by centralizing all data and optimization layers with intelligent decision making that sit on top of standard enterprise resource planning systems can provide transparency and insights for day-to-day supply chain management which is critical for many enterprises such as pharmaceutical, retail, hi-tech and consumer goods companies.

Pluto7 Supply Chain solutions on Google Cloud provide the scalability, performance and predictive analytics capabilities for enterprises which are essential in handling these supply chain disruptions. We enable AI-based decisions at scale and near real-time.

If you are new to Google Cloud and are exploring how to leverage Google to manage your supply chain, these machine learning solutions provide you a head start.

We are helping our customers make timely decisions with customized ML/AI solutions with the goal of covering the end-to-end supply chains, having a more granular and near real-time insights than their current capabilities.

Control Tower for end-to-end Supply Chain Visibility

SOLUTION : ENABLE A SUPPLY CHAIN CONTROL TOWER LEVERAGING PLUTO7 SOLUTIONS

Pluto7 has 6 accelerated supply chain solutions available - some of them are available on the Google Cloud Marketplace. These solutions help global leaders build the foundational blocks for scenario planning as well as to respond correctly, getting up to speed amidst the COVID-19 outbreak.

Value Chain ML (video) - Provides End-to-End visibility into the business with Machine Learning assisted decisions at each stage of the supply chain nodes in the network to maintain supply & demand balance.

Marketing ML (video) - Provides campaign effectiveness with insights into customer behavior in regards to marketing efforts carried out by the organization, all aligned to supply chain, demand and supply E.g. Salesforce - Pardot integration - check solution page here

Sales ML (video) - Improves sales productivity reducing customer churn risk by identifying products that benefit the company and aligned to the existing supply inventory availability.

Demand ML (video) - Drives Forecast Demand Accuracy so that supply is planned better - check solution page here

Supply ML (video) -Provides an effective way of managing the excess and shortage of supply inventory.

Preventive Maintenance ML (video)- Helps to effectively use the labor and machinery in the manufacturing plants to produce the supply by predicting the remaining useful life of a machine or industrial equipment. This solution is a Gartner award winner, implemented by ABInBev - check solution page here

These 6 digital solutions when rightly brought together with a unified data strategy allow businesses to successfully apply AI and Google Cloud technologies.

THE 6 SOLUTIONS ARE HELPING TO ADDRESS THE FOLLOWING:

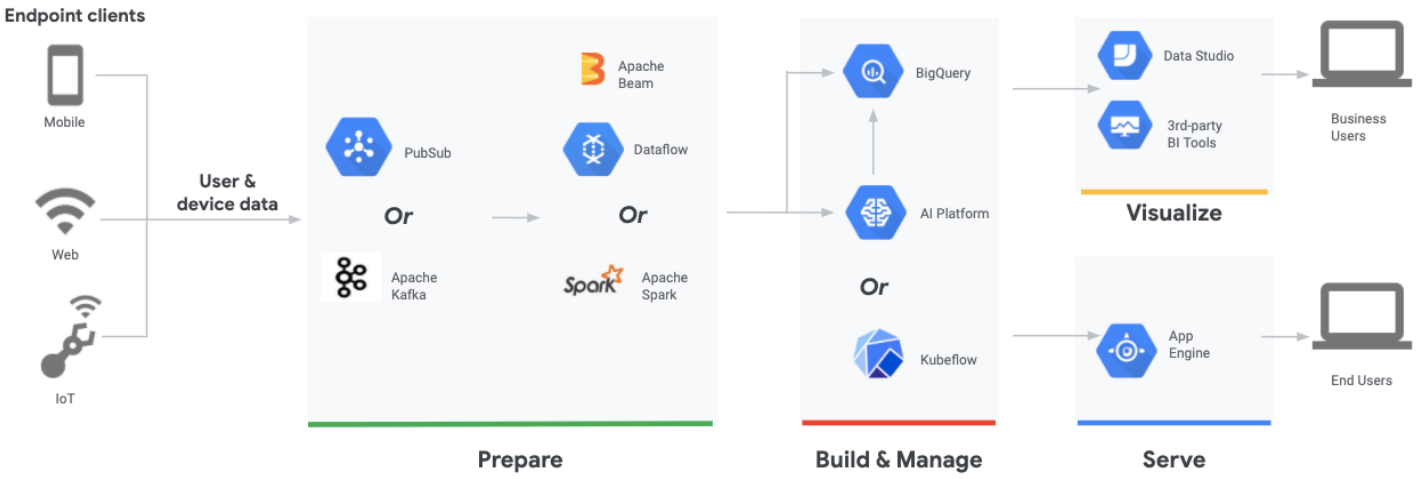
- **Improve demand forecast accuracy** to reduce bullwhip effect.
- **Manage supply and demand imbalance** reducing excess and shortages.
- **Inventory Visibility Across Value Chain** to understand your customer experience.
- **Planning ahead** - Procure inventory and raw material that are in short supply namely in impacted areas.
- **Supplier selections** - Helps to identify the company's strategic suppliers and understand their ability to meet supply requirements and potential risks.
- **Order tracking** - Identify key locations to shift production and purchase order fulfillment status.
- **Adjust customer allocations** - handle delays caused due to disruptions thereby meeting contractual terms
- **Inventory movement** - Divert the finished goods previously destined for impacted areas into other units.
- **Plant management** - Prepare for plant closure or plant schedule change by helping your machines operations planning

These solutions do not replace your existing ERP or MES or Supply Chain Planning system, but rather augment with deeper intelligence and visibility into the supply chain those existing capabilities do not provide.

Simplistic view of the foundational reference architecture used to build these operational solutions

Accelerate your solution development with our unified, open and fully-managed architecture. These are proven at the Enterprise scale of some of the most complex supply chains in the world.

Container Engine



Harness the real power of AI by operationalizing the solutions with data centralized in BigQuery and decisions made with ML. A control tower view is done in 45 days for limited scope which can then be built upon.

CONCLUSION

In conclusion, almost no one could have predicted the exact scale, magnitude and pace of COVID-19, however within the first few weeks the ramifications became clear to supply chain experts.

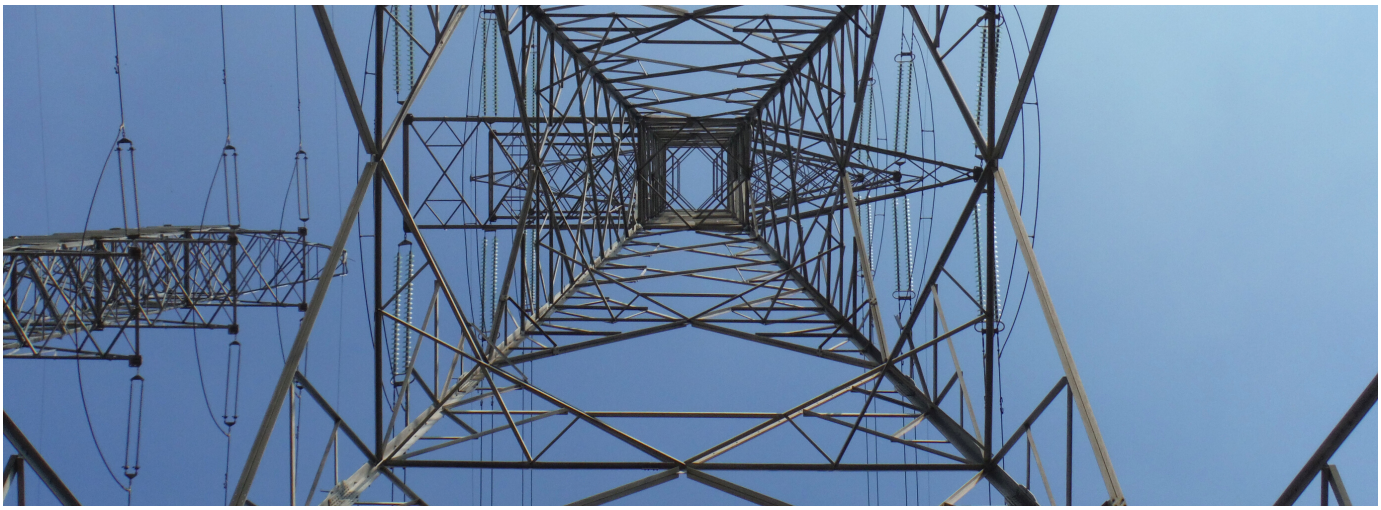
As supply chain professionals, we have the expertise and know how to help and guide our business to not only prepare for the current situation but also project the impact over the next 12 to 18 months.

There are foundational aspects of handling the disruptions which need to be acted upon for business recovery of most organizations. This include enhancing visibility across supply chains by centralizing the data on Google Cloud and enabling faster higher accuracy decisions using ML and AI across various nodes in the supply chain.

Scenario planning simulations run by automated capabilities on Google Cloud overcomes typical system limitations. The above capabilities are to get a company started with their industry 4.0 journey and by no means a comprehensive solution.

No system will solve any problem unless we marry the new capabilities with right change management for people, processes and existing legacy systems. Like every other major historical challenge, the industry will overcome this crisis as well.

Reach out to **marketing@pluto7.com** for a 2-weeks free trial.



References

Reference Papers and Resources

Pluto7 white paper: A modern Supply Chain Control Tower:
https://drive.google.com/file/d/1v94xOk1JBqhbvM6VI9s0Gc_1XEw5usyS/view

Pluto7 Case Study :

- Retail Enterprise - Inventory & Supply Chain - California Design Den
- CPG Enterprise - Manufacturing - Ab Inbev (Budweiser)
- Healthcare Corporate - Data Warehouse - Dxterity
- Financial Company using document scanning - Document AI - RMI Insights
- Kubernetes usage on Cloud for Smart Supply Chain Application - Click Here

Open Source for Demand Forecasting by Pluto7 :

- Ai Hub -https://aihub.cloud.google.com/u/0/s?q=pluto7

Additional Reference :

https://www.treasuryandrisk.com/2020/03/19/covid-19-supply-chain-disruption/