

CILTNA "PRACTITIONERS SERIES" LOGISTICS WEBINARS

# SUPPLY CHAIN RECOVERY AND RESILIENCE

Practical advice for small and medium-size firms



15 JULY 2020

BCIT



Seneca

# Objectives and deliverables



## Practical advice for owner/managers of small and medium-sized firms

- Why do supply chains react as they do?
- How to **recover** supply chain fluidity following current disruptions
- How to make supply chains more **resilient** against future disruptions



## Delivered via

- Series (two or three) free webinars
- Tailored by survey results
- Free student consulting opportunities in Toronto and Vancouver areas



## No miracles promised

- These webinars can help with struggling supply chains — not supply chains that aren't moving at all



Diversify not  
deglobalize

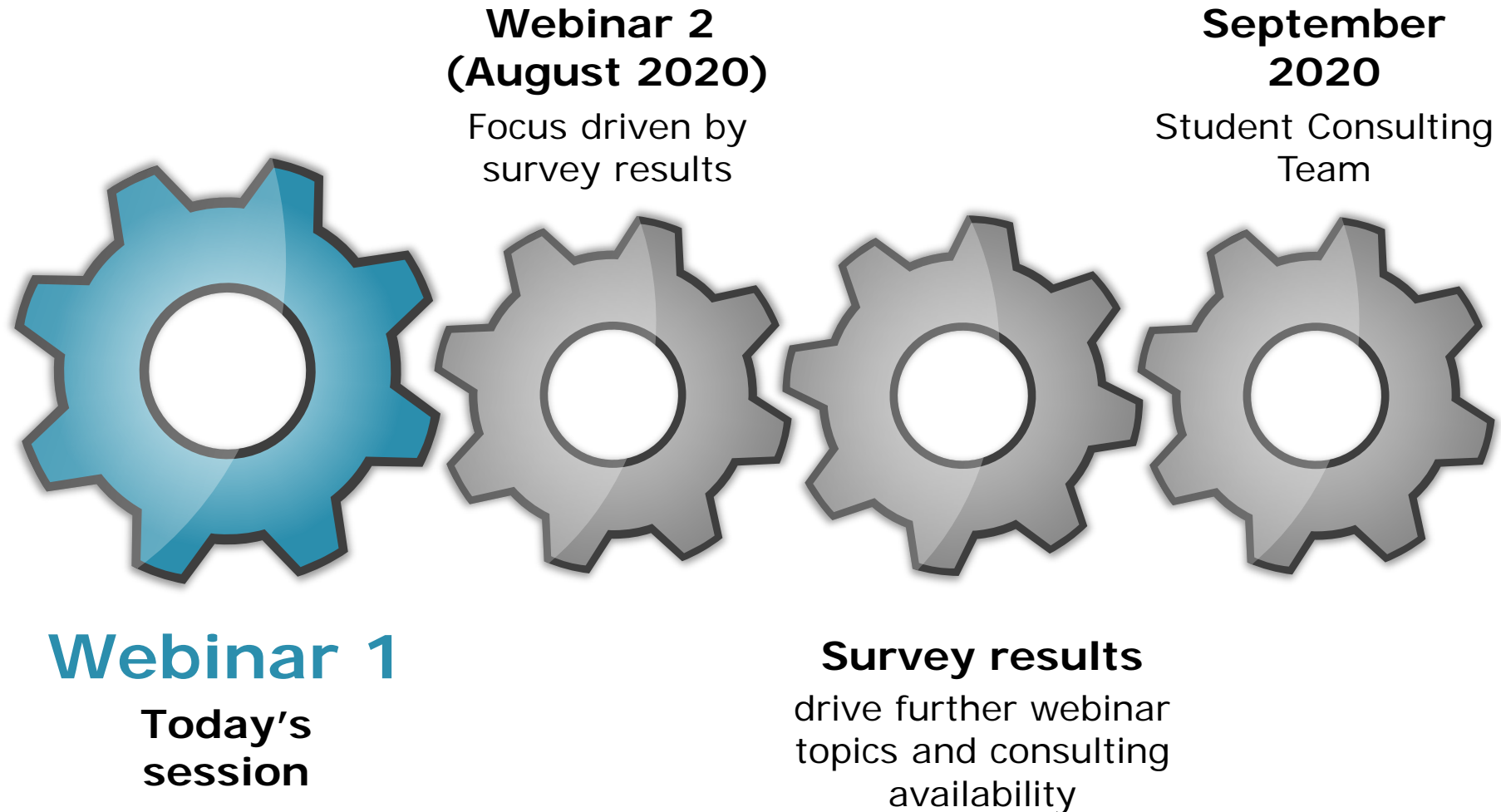
From just-in-time  
to Just-in-case

Optionality





# Program structure





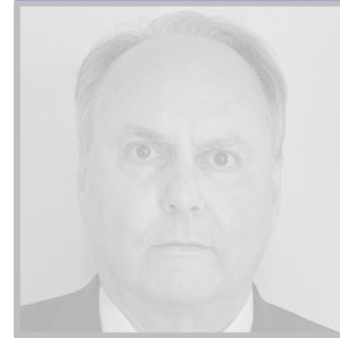
# Delivery partners



**Seneca College**

**Prof. Jim Wyer**

*School of International  
Business Mgmt.*



**CILTNA**

**Paul Miller**

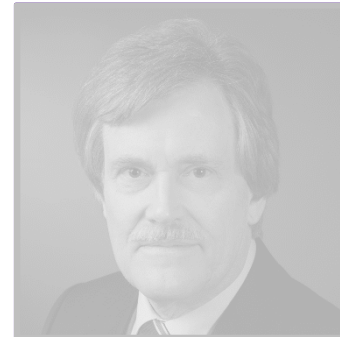
*Ex CN*



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School of Business + Media*



**CILTNA**

**John Coleman**

*Ex NRC*



# Manufacturer-centered supply chain

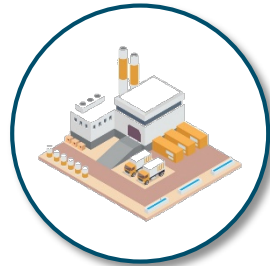
**Sub-component  
Manufacturers**  
(100s)



**Component  
Manufacturers**  
(dozens)



**Assembly Plant**  
(a handful)



## **DISTRIBUTION CHANNEL**

**Wholesalers**  
(100s)



**Retailers**  
(1000s)



**End  
Consumers**  
(millions)



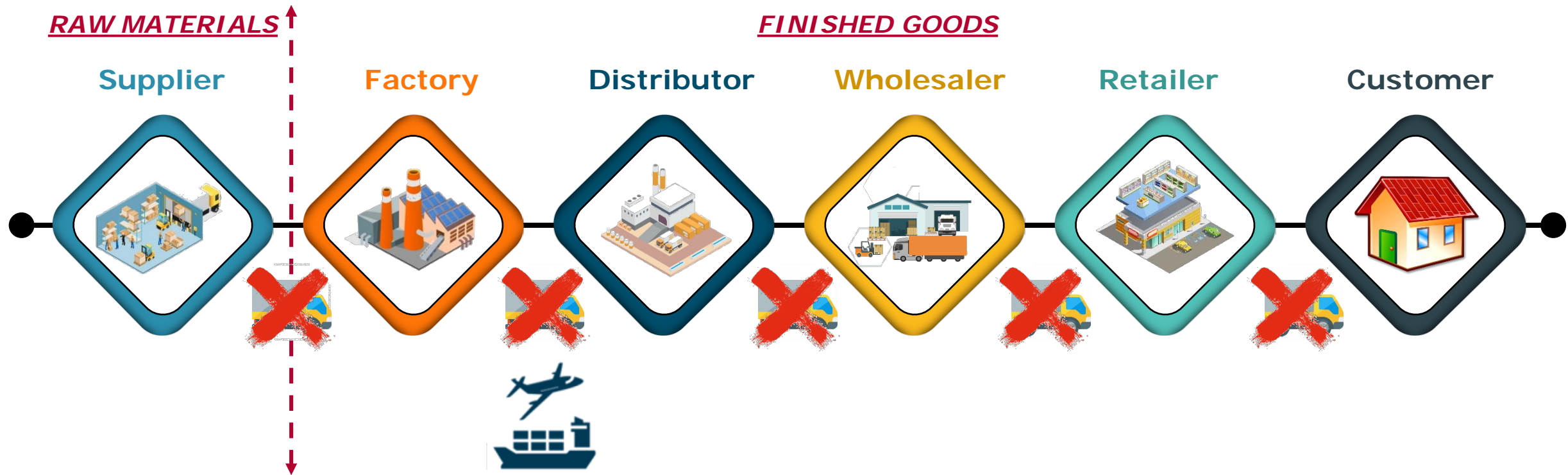


# Retail-centered supply chain





# When things go south



- Inventories sitting
- Shipments stopped
- DC capacity unavailable

- Customer orders timed-out
- Invoices, payments, credit conditions in limbo

- No master scheduler to coordinate start-up
- **CONGESTION!**

# Shock and awe



COMPANY NEWS

Nov 18, 2019

## CN Rail threatened by disruption with Teamsters poised to strike

Thomas Black, The Canadian Press



Container shipping lines are bracing for steep financial blows as operations at China's ports grind to a near halt. Carriers have canceled more than 50 sailings from China since the outbreak of the coronavirus, the WSJ Logistics Report's Costas Paris writes, and logistics operators say remaining ships serving the country's troubled ports are leaving China with only a small fraction of their capacity filled. Several carriers say privately they are preparing for a heavy impact on earnings as they scramble to cut sailings in line with the diminished demand. Germany's Hapag-Lloyd AG is due to release preliminary results for its 2019 fiscal year this week that may include a window on the impact on shipping lines, including projections for capacity in the coming weeks. Shipping analysts warn that a rebound in China's output in the coming weeks may overwhelm transportation networks, triggering a sharp upturn in freight rates.

Source: Paul Page. (2020, Feb 18). Wall Street Journal "Logistics report". Retrieved from <https://logistics.cmail19.com/t/ViewEmail/d/BC956C9BE15520902540EF23F30FEDED/D768B6AD16B4AEB440EE66FE10287772>

## Canada's CN rail system shut over blockade

13 February 2020



January 23, 2020

The city of Wuhan is placed under quarantine and a few days later, so is the entire province of Hubei.

On Wednesday, British Airways and Air Canada suspended all flights to mainland China, and Delta joined the growing number of carriers reducing service. Japan's leaders are bracing for a possible hit and the Federal Reserve is "very carefully monitoring" the situation. Hotels and tour operators across Asia are watching fearfully as the world's largest source of tourism dollars tightens its borders.

Source: Alexandra Stevenson. (2020, Jan 29). Coronavirus Outbreak tests world's dependence on China. Retrieved June 23, 2020, from The New York Times: <https://www.nytimes.com/2020/01/29/business/china-coronavirus-economy.html>

VANCOUVER -- A lockout notice issued by the group representing over 50 waterfront employers in British Columbia will take effect Thursday, but the union's president says his members are committed to keeping the ports open. Rob Ashton of the International Longshore and Warehouse Union said if they wanted to close B.C.'s ports, from Vancouver to Prince Rupert, that would have been done when their strike notice expired on Monday.

Source: "Union says port workers still on the job in BC despite lockout". (2019, May 29). Retrieved June 23, 2020, from ctvnews.ca: <https://www.ctvnews.ca/business/union-says-port-workers-still-on-the-job-in-b-c-despite-lockout-notice-1.4442212>



# The Pandemic has magnified how disruptions have reintroduced/introduced types of RISK's associated with Supply Chain\*



\*Note this is not an exhaustive list of risks



# HOW SUPPLY CHAINS BEHAVE



# Every supply chain is a complex system

## The Basics

- Non-linear → a percentage change in one part of the system won't cause same % anywhere else
- Feedback loops → exponential collapse (think covid-19: more people infected ↔ faster spread)
- Always random variability going on

## These mean

- Large unwanted effects can appear suddenly and spread with astonishing speed
- You can get surprisingly wide swings in input levels, output levels, reliability
- No system can be managed completely

## Takeaways

- Extremely risky to run at near-capacity
- Most system problems aren't someone's fault
- System behavior is the result of (system design) + (collective behavior)





# Twin curses: Variation and Constraints

## The Basics

- There is always **variation** — amount/nature of demand, supplies, tolerances, seasonality . . .
- There are always **constraints** — raw materials, HR, plant capacity, transportation, storage, money . . .
- Variation causes constraints to manifest themselves
- A minute lost at the constraint, is a minute lost to the entire supply chain

## These mean

- Variation is the primary culprit in most supply chain problems

## Takeaways

- You need to minimize variation, especially at the constrained operation
- Everyone in the supply chain benefits from greater throughput at the constraint, wherever it is







# Systems with dependent events

## The Basics

- Virtually every system has dependent events
  - Operation X must be completed before Operation X+1 can begin
- Negative (unwanted) variance accumulates, but positive variance dissipates

## These mean

- Positive and negative variances do not cancel each other out
- Unless negative variance is very small, you will keep getting farther and farther behind

## Takeaways

- You cannot store up positive variance to offset the negatives that will occur





# The bullwhip effect

## The Basics

- Wilder and wilder swings of inventory as you get farther up the chain
- Wild swings → high variation → constraints can't handle flow → clipped throughput

MANUFACTURER

DISTRIBUTOR

RETAILER

CUSTOMER

## These mean

- Each member of supply chain is "ordering up" to buffer its own inventory
- Forecasts are usually based on guesses, hope, and/or exaggerations

## Takeaways

- Everyone in supply chain needs real information on everyone else's sales, capacity, and inventory





# Delivery partners



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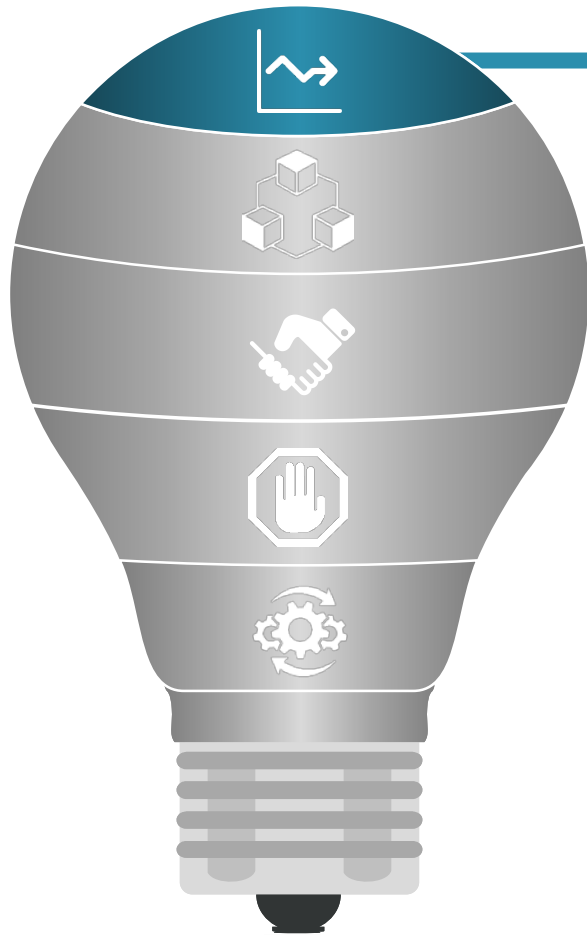
An aerial photograph of a large container port at sunset. The foreground is filled with stacks of colorful shipping containers (red, blue, green, yellow) and several yellow gantry cranes. In the background, a dense city skyline is visible across the water. The sky is a mix of orange, yellow, and dark blue. The image is framed by a dark blue diagonal border on the left and bottom.

# SUPPLY CHAIN RECOVERY: TAKING ACTION





# Emerging from the pandemic



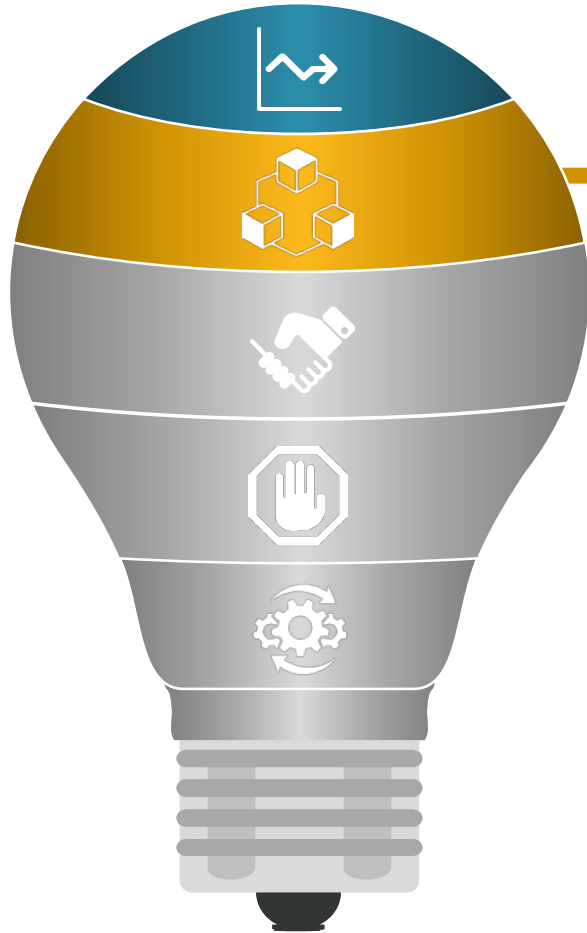
## Don't de-stabilize your complex system

- Run safely below maximum capacity
- Be careful not to generate big ripples in your supply chain
- Be careful about finding fault with others—they're probably innocent, and you need their goodwill





# Emerging from the pandemic



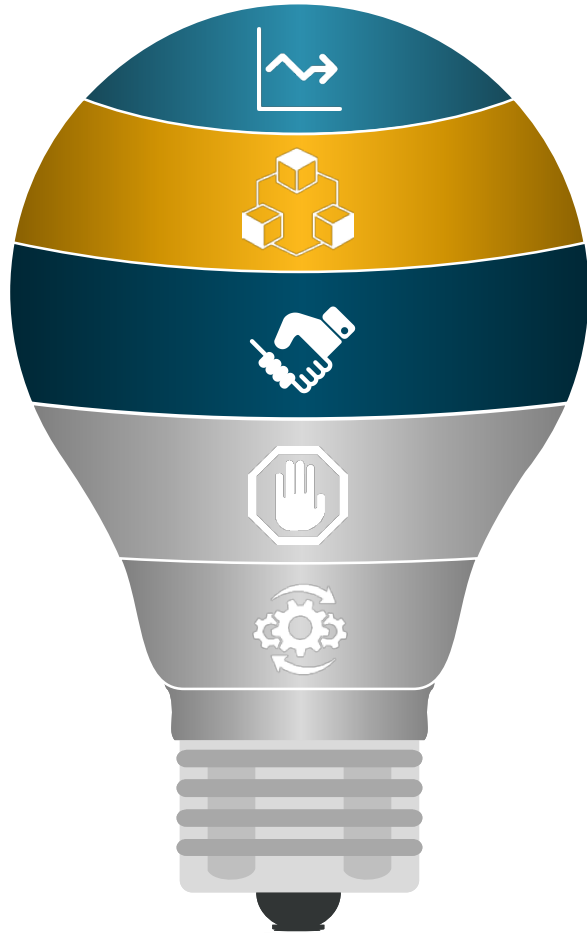
## Work within limits of dependent events

- **At every step:** Reduce negative variance
- Don't try to do better than operating target at any step





# Emerging from the pandemic



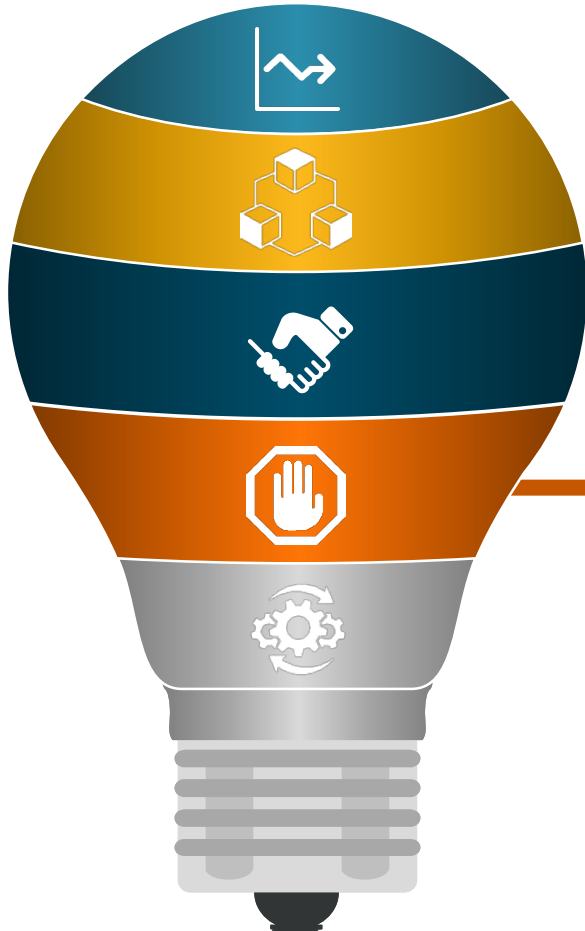
## Deal with variation and constraints

- Minimize variation at the constrained operation
- Build trusting relationships with everyone in your supply chain
- Work out constraint-busting arrangements





# Emerging from the pandemic



## Help prevent the bullwhip

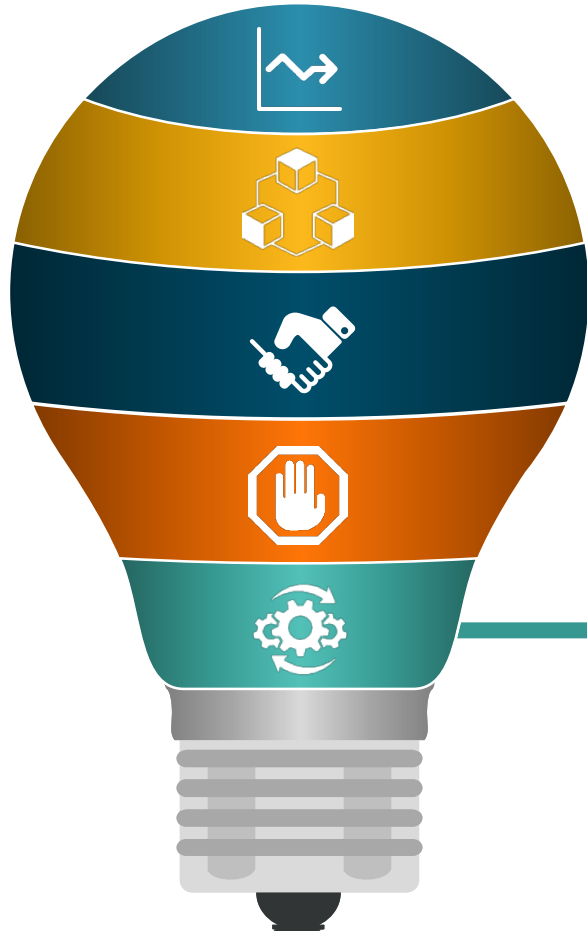
- Minimize variation in your purchases — try not to batch = use smaller order sizes
- Minimize variation in outbound shipments—ask if your customers will take ½ orders twice as often
- Don't bunch end-of-month sales or purchases to meet quotas
- Stabilize price fluctuations
- Don't phantom-order (*you need 100, order 120, hope to get 90*)
- Be careful about ordering same thing from many suppliers (***their** suppliers will start overproducing*)







# Emerging from the pandemic



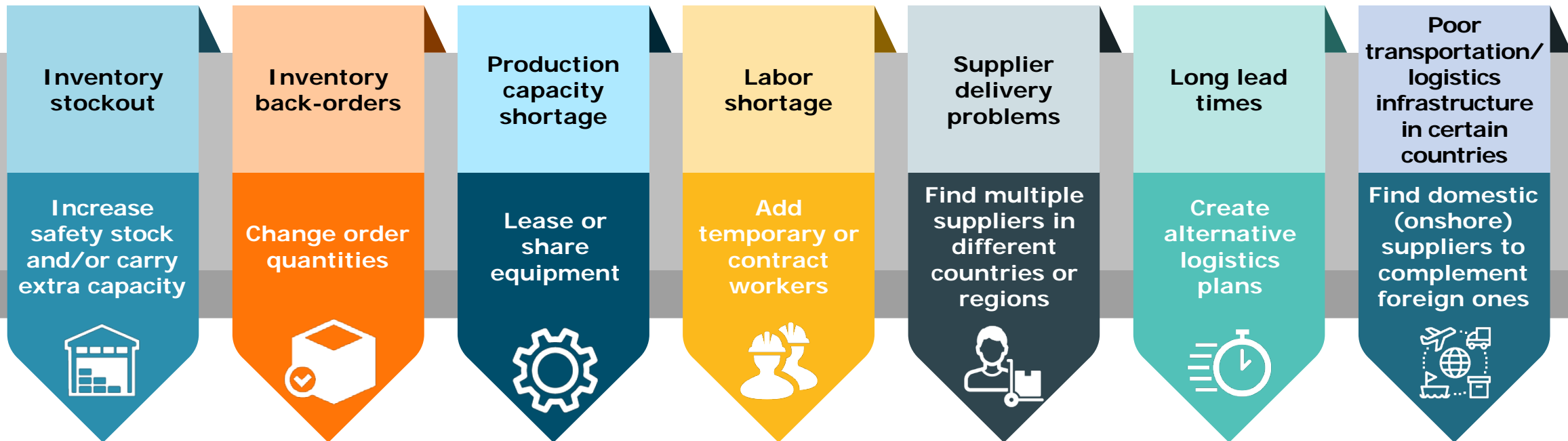
## Optimize

- Drive for **maximum** throughput of best-available (high-margin) product mix
- Find the constraint wherever it is in your supply chain
- Minimize variation at the constraint
- Keep constrained operation busy 24/7
- Find next constraint → repeat



# Tactical problems and actions

## COMMON PROBLEMS



## RECOMMENDED ACTION



# Live by the Golden Rule

“

## ***TREAT OTHERS AS YOU WANT TO BE TREATED***

”

- Recognize that your suppliers, carriers, and other service providers are dealing with the pandemic as best they can
- Give them *real* information about your needs
- Ensure all documentation is provided electronically, on-time, error-free
- Pay invoices per agreed credit terms, or discuss payment plans in advance
- Treat truckers, delivery people, and railway switching crews with respect
- Companies are run by people; they help their friends first





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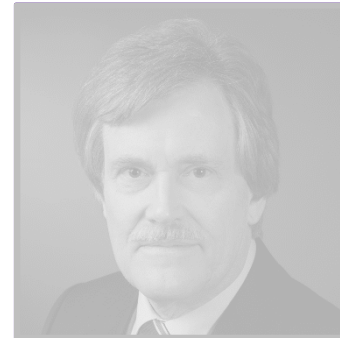
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# IMPROVING SUPPLY CHAIN RESILIENCE: MANAGING FUTURE RISKS

# Manufacturing and sourcing



- Find multiple countries of origin
- Find multiple suppliers
- Find domestic (*"on-shore"*) or nearby (*"near-shore"*) suppliers
- Find possibilities for 3D printing of components
- Standardize components (*enable rapid substitution*)

Asian



North American







# Transportation

End-to-end  
communications

Manufacturing  
Transportation  
and Sourcing

End-to-end  
Transportation  
communications

- Use multiple ports
- Use multiple coasts
- Use multiple carriers
- Use multiple modes
- Expand conventional intermodal  
(*reduce dependence on single mode*)
- Set up and use intermodal options





# End-to-end communications

Manufacturing  
and sourcing

End-to-end  
communications

Manufacturing  
and sourcing

*Set up and regularly test:*

**Shared communications platforms**

**Digitized communications**

**Shared reports, KPIs, triggers**

**Early warning systems**

**Forecasting and hindcasting**

**Practices for risk identification,  
management, and mitigation**







# Faculty-led college students consulting project



## When

September to December, one day per week



## Who

Teams of specialized logistics students in their final year at BCIT, and in final year or recent graduates from Seneca college, led by a faculty advisor



## How

Identify issues, determine root causes, make informed recommendations



## Cost

No charge, but donations appreciated

# Business Consulting Projects



**Three Operations Management students found a way to save one Craftsman Collision outlet \$600,000 a year while doing a business consulting project for the company.**

Source: [Crafting-industry-innovation-a-bcit-consulting-success-story](#)



# Feedback wanted



## FEEDBACK

on *this* webinar's  
content and presentation



## SUGGESTIONS

What would you like to see  
next? Or see more of?



## SHORT SURVEY

will be e-mailed to you  
within 24 hours



## WEBSITE

...and for those interested  
in joining CILTNA

**Survey form is the gateway to BCIT and Seneca's consulting programs,  
autumn 2020**

- Currently available in **Toronto** and **Vancouver** areas
- Capacity is limited, so please contact the colleges without delay

# THANK YOU

WE'LL NOW TURN TO QUESTIONS AND COMMENTS FROM THE CHAT FUNCTION.







# This webinar was brought to you by...

## Jim Wyer

*MBA, CITP, CCI, CCS, CCLP, P.Log, CMILT, CSCP, C.MGR*

Jim is a professor in the School of International Business and Management at Seneca College where he specializes in teaching Global Supply Chain and Logistics, and he is Seneca's Program Coordinator of Purchasing and Supply Chain Management, and the liaison to many industry associations. An experienced entrepreneur who ran his own customs brokerage, freight forwarding, and travel agency firms, Jim has earned academic qualifications including an MBA and many professional certifications including from the Canadian Society of Customs Brokers (CSCB), the Canadian Institute of Traffic and Transportation, the Logistics Institute, the Forum for International Trade Training (FITT), the Canadian International Freight Forwarders Association, the Chartered Institute of Managers, and of course the Chartered Institute of Logistics and Transport. He is a national director for FITT, served on the national and Toronto boards of CSCB, and volunteers with the Kinsmen Club of Ajax, Ontario, serving a variety of worthy causes.

## Jackie Li

*MBA, CCLP, MILT, CCI*

Jackie is a faculty member at Langara College Continuing Study, and Program Head of International Business Management at the British Columbia Institute of Technology. He is a CIFFA certified instructor with over 10 years of logistics and international business experience in the transportation industry. He currently serves as an executive board member of the Pacific Chapter of CILTNA and of the Vancouver Area Council of Canadian Institute of Traffic and Transportation (CITT). Before entering academia, Jackie held positions in several Fortune 500 public companies and privately-held logistics conglomerates in the field of marketing and sales operations. He is a seasoned logistician with a background in sales, accounting, and academic disciplines. He earned an MBA degree from Coventry University in the UK, with a focus on international business management. Besides a passion for logistics, he also pursues research in economics and disruptive technologies.



# This webinar was brought to you by...

## Paul Miller

*M.Sc.E, P.Eng, ICD.D, CMILT, P.Log*

Paul is a widely-respected transportation consultant whose clients include CN, CP, the Railway Association of Canada, Enbridge, JD Irving Ltd, and leading US and Canadian logistics companies; and he is the Railroader in Residence at the University of Alberta's Canadian Rail Research Laboratory. For most of his 33+ year career at CN prior to retiring he was VP and Chief Safety, Sustainability, and Network Transportation Officer; VP and Chief Safety Officer; VP Transportation Services; and General Manager Transportation Services. He has served as chair of the Railway Association of Canada's Safety and Operations Management Committee and is currently CILTNA's corporate secretary and director on its national board.

## John Coleman

*B.Eng, MBA, P.Eng. MILT*

John is a senior fellow at Carleton University's School of Public Policy and Administration where he teaches masters-level courses in transportation policy and is developing a research and education centre on transportation policy. Before retiring he served as VP Engineering at the National Research Council of Canada and for almost two decades before that as General Manager of NRC's surface transportation technology centre. He is a member of CILTNA's national board and its Ottawa board, is chair of CILTNA's education committee, and has contributed reports to the most recent Canada Transportation Act review and Railway Safety Act review.