Supply Chain Innovation in 2021 and Beyond

The Road to Trust
About Chris

Founder & CEO of Truckl

- Supply Chain Technologist
- Private Equity Turnarounds
- Edgeware, GPS, RFID and IoT
- Several start-ups (over $45M venture funding)
- Stints in cyber security and cryptography
- 75+ software implementations on three continents
- 5 awarded patents on edge computing, IoT and GPS, several more pending
- 14+ years of teaching at UNT (Supply Chain Strategy, ERP, SCM), 7+ Years at University of Dallas (Strategic Management, Supply Chain Strategy)
Supply chain professionals were in far greater demand than nurses at the outset of the COVID pandemic.
Part 1: A Couple of Thoughts

Part 2: Major Trends in Supply Chain
- New Markets
- Everything Real-time
- Dazzling Possibilities
- New Friends
- Brave New World

Part 3: How Can You Deal With All of This?
“The Americans have need of the telephone, but we do not. We have plenty of messenger boys.”

Sir William Henry Preece (1834 - 1913), Chief Engineer to the British Post Office.
The Question Is Not How It Starts, But What Comes Of It.

Think Big, Start Small, Move Fast!
Mahler foresaw that music would someday be listened to by tens of thousands of people.
“**Innovation** is the market introduction of a technical or organizational novelty, not just its invention.”

“Creative **Destruction**”

“No innovation, no **entrepreneurs**.”

“Firms must constantly **keep on their feet**, on ground that is slipping away from under them.”

Joseph Alois Schumpeter
What Makes Innovation Work

Prerequisites for any technology offering

People

Desirability

Start Here

What do clients want and need?

Business

Viability

What can be financially attractive?

Feasibility

What is technically and organizationally possible?

Technology

Now Implement

Source: Ideo
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GOOGLE EFFECT: EVERYONE IS SKILLED IN FINDING THE FACTS
Product authenticity will grow in importance

King Crab Fisheries provides a product traceability portal for its restaurant customers
Smarter use of consumer and market data through AI

Ikea uses AI to maximize returns profitability
Convenience trumps other factors and sets expectations.
Exciting new experiences may fade, but cost-cuts could stick

Creator offers burgers made by a robotic cook
Micro plants, warehouses and popup stores

Reef offers containers as mobile kitchens – it owns a lot of parking lots
Amazon and Walmart understand the importance of last mile. If you own the last mile, you de facto own the customer.
Supply chain flexibility is the new gold

DHL created a pop-up warehouse in 48 hours
Our understanding of work continues to blur

Tech startup JoyRun turns everybody into a gig economy worker
... it’s only a matter of time before someone turns your garage into a parcel delivery hub
Some manufacturing will be moving in with you.

The Singaporean government sent 400k seed kits to households.
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Supply chains need to process information increasingly faster... at the edge!

Source: Gartner, 2020
IoT is pervasive and will continue to grow (quietly)
IoT enables self-organizing systems
Sensors gradually permeate our lives.

Toyota Woven City was designed for sensors.
Roadways are getting smarter and need to be ready for AV

Panasonic is enabling smart highways
Vehicles as platforms – think hardware and software

Daimler recognizes the new role of trucks
Real-time data from the road needs to be actionable.

Embark just implemented real-time diagnostics.
AR is the next interface along with voice

Apple's first AR glasses are about 2 years away
Inventory counts, service and support, production lines, ...

Niantic already offers a platform for 3rd party apps
Collaborative AR unlocks potential for design and optimization

Ubiquity6 makes the sharing of AR experiences extremely easy
Expect machines to be increasingly “human”

Google DeepMind uses games to raise its EQ
AI will eventually be available to everyone

NeuralLogic enables regular PCs to run AI
We might think it’s fake, but our kids won’t.

Xinhua uses virtual news anchors.
Technologies such as blockchain have potential

Truckl designed a blockchain solution to reduce congestion, lower emissions and enhance safety on federal highways.
Immutable ledgers allow you to prove what you did.

Air New Zealand anchors 3D printed parts on-chain.
Traceability requires immutable ledgers, but ...

Truckl and UNT proposed a COVID vaccine and test kit supplier registry on-chain
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Robots do jobs that humans don’t want or can’t do

Knightscope offers robotic security guards
Sometimes they are actually better suited than we are.
Virtual helpers will become more commonplace as well. Samsung provides avatars that form memories.
Avatars help in situations where humans would be overwhelmed.

Tailspin programs avatars that train employees.
Some jobs are likely going to be lost within our generation

Boston Dynamics (now Hyundai) offers package handlers
Co-bots help where human intelligence and situational awareness is key.

Strongarm manufactures exoskeletons allowing workers to lift heavy loads.
Drone deliveries face obstacles, but... 

Zipline flies 25k miles every day
Engineers will figure it out, if consumers want it.

Amazon has a patent for packages that can be dropped from the air.
Walmart started a pilot to deliver packages by air in September.
Cargo drones can fly 500 lbs. already

Volocopter works with DB Schenker on cargo
We have self-driving cars already

NASA built a self-driving car for Mars
The last mile battle is far from over

Nuro rolled out pilots with Kroger & Walmart
AT have been used in mines and remote locations.

Einride makes it a requirement that its drivers operate the trucks.
First autonomous Grand Prix in 2021: 20 laps around Indy in 25 minutes at an average speed of 185 mph
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Quantum Computing
Inventory Sounds
Boom Supersonic
AI as an Inventor
Hitchhiking Drones
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Get ready for a world in which we live in another dimension as well... from physical to digital.
Supply chains ultimately must come together, and collaboration will be the new normal.

Optimization doesn’t stop within your organization. It’s just a matter of time.
Autonomy and robotics will eventually become commonplace, and integrate across supply chain and manufacturing.

We are going to see fully robotic supply chains from farm to table ... but when?
Computing continues to push towards the edge, and everything will be much more decentralized.

Decisions will be made at the edge and operators gain a renewed importance.
Supply chain capacity, services and space will be automated, and can be traded like any other commodity.

Market places or stock exchanges for logistics and supply chain
The confluence of many different technologies enables a Brave New World.

It’s scary to think about some of these things, but ...
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“The key to winning is getting to where the puck is going to be next.”

“The Great One”
Not All Innovation is Equal - Identify Pretenders Early and Fast
Adopting innovation requires an open mind and the willingness to fail. Don’t …
Questions, please!
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