

The Future of the Manufacturing Supply Chain

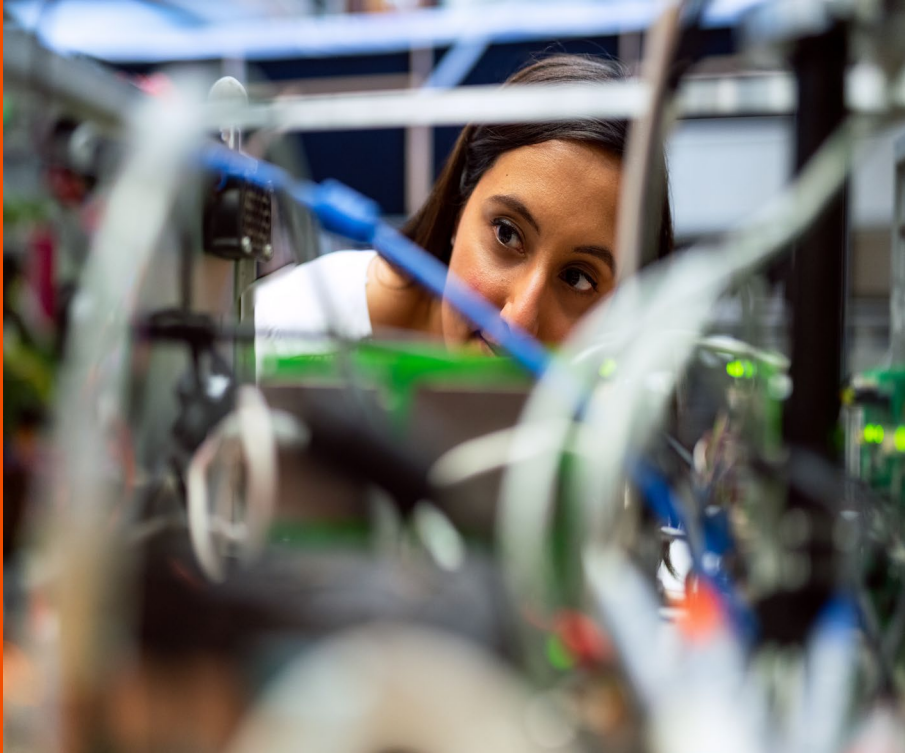
DAIR-NGen Webinar, October 6, 2022

Stewart Cramer
Chief Manufacturing Officer

NGen Next Generation
Manufacturing Canada

Industry Led Collaboration

Ground-Breaking Innovation



Workforce Development

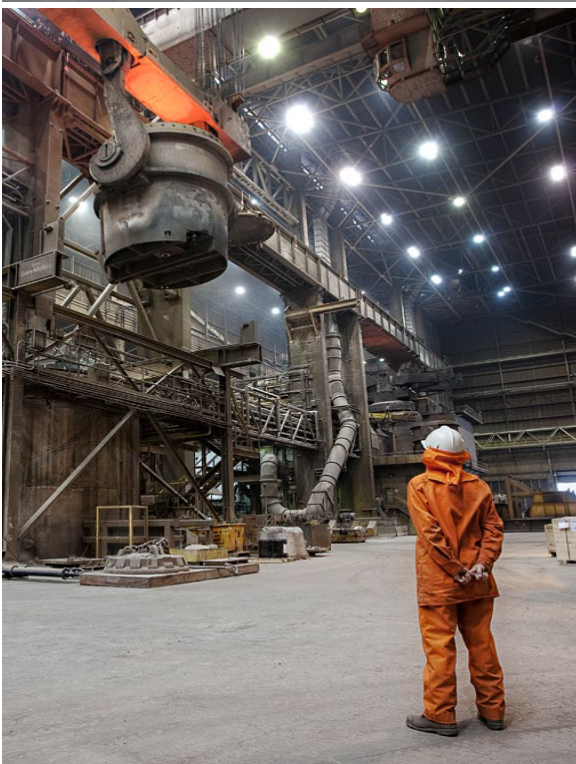
Shared Insights + Resources

NGen

Next Generation
Manufacturing Canada

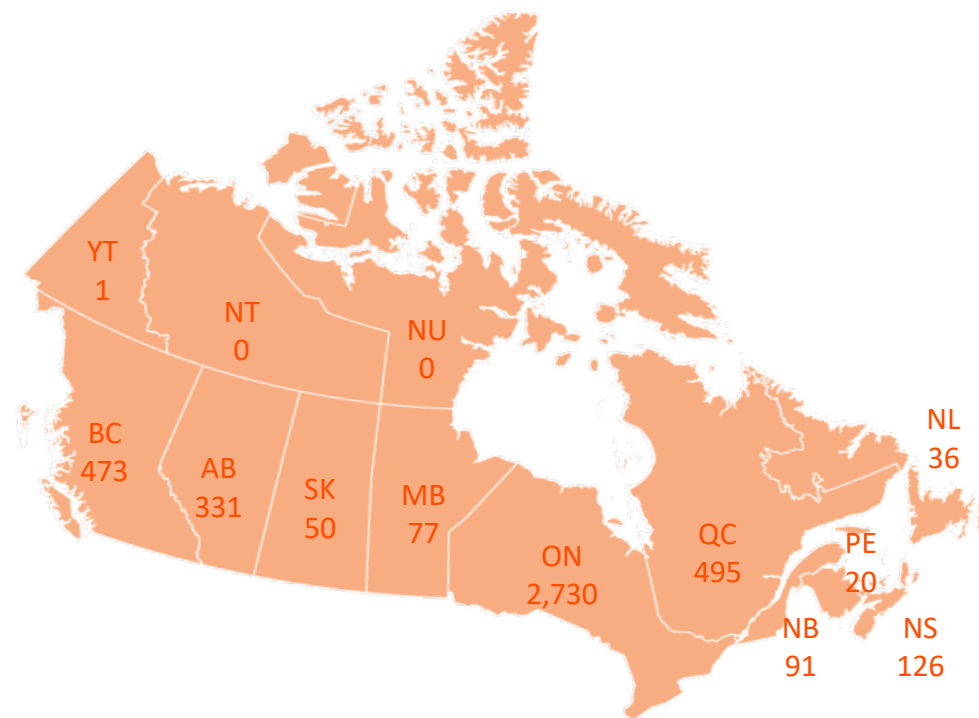
NGen is the industry-led, not for profit organization leading Canada's Advanced Manufacturing Supercluster with funding from the Government of Canada as well as other public and private investors.

NGen works to leverage Canada's research, technology and manufacturing strengths to build world-leading advanced manufacturing capabilities for the benefit of Canadians.



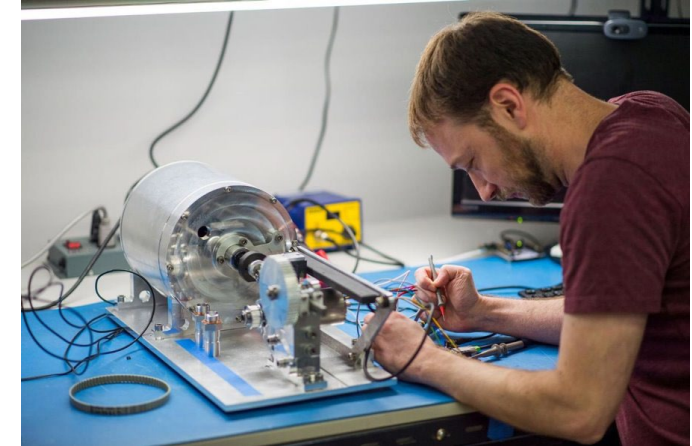
Building Canada's Advanced Manufacturing Ecosystem

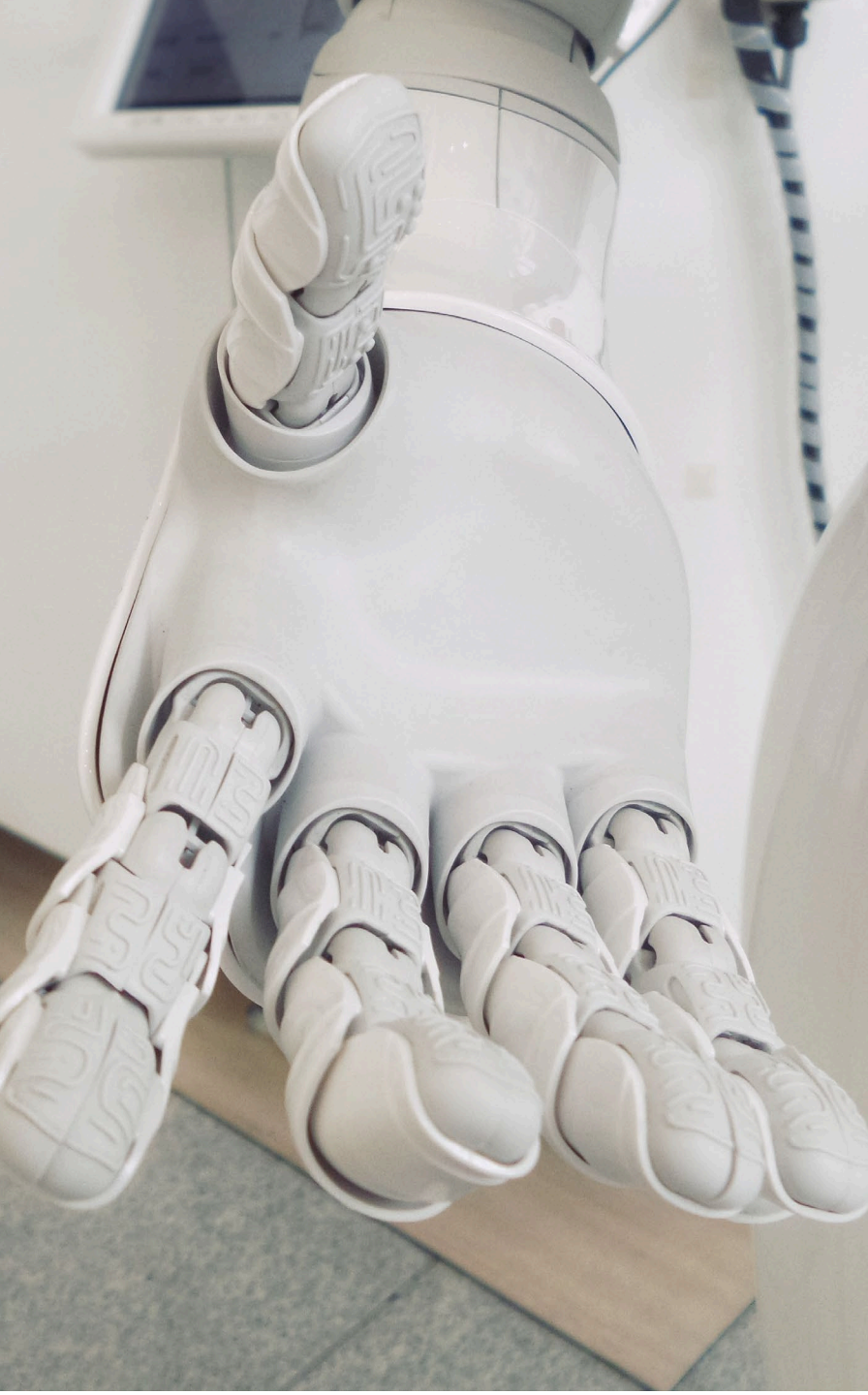
NGen Members across Canada



Over 5,000 members across Canada and the world.

- Manufacturers
- Tech Providers
- Colleges & Universities
- Industry Networks
- Business Services
- Investors & Funding Agencies
- Researchers & Experts





Next Generation Manufacturing Canada



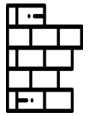
Promoting
Canadian
Capabilities



Making
Connections
Strengthening
Collaboration



Funding
Collaborative
Innovation



Enhancing
Skills &
Management
Capacity



Canada's Challenge



Only **7%** of Canada's manufacturers regularly benchmark themselves against competitors (**5%** of tech companies).



Fewer than **20%** of manufacturers deploy Lean management practices.



Only **17%** of manufacturers collaborate with other companies on a regular basis.



More than **50%** of manufacturers report skill shortages, but only **20%** are actively recruiting or investing in skills development.



80% of manufacturers have invested in an advanced technology over the past five years, but **45%** of those companies did not meet their business objectives.



84% of all digital transformation projects undertaken by Fortune 500 manufacturers have failed.

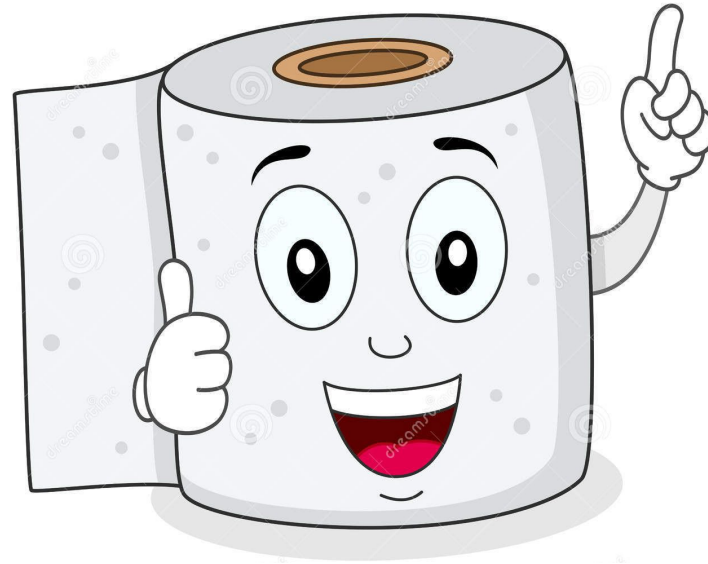
Pre-COVID, 30% of Canadian manufacturers were at risk of going out of business because of their failure to adopt advanced technologies.



How Could We Have Run Out?

Toilet Paper???

- Not “rocket science”
- No shortage of raw materials



PPE????

- Not “rocket science”
- No shortage of raw materials
 - Or is there?

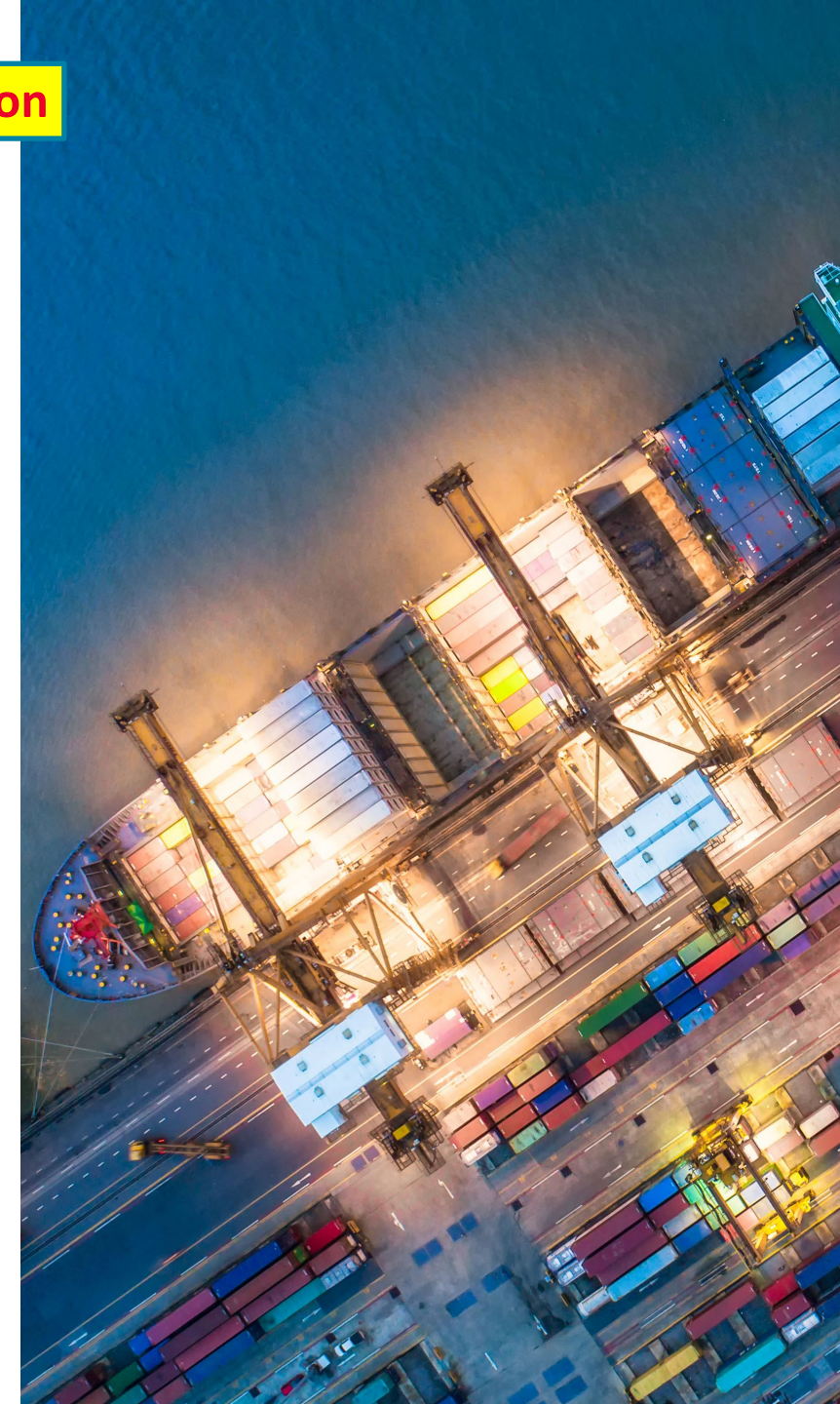


We are finding systemic issues in most supply chains today!

Challenges Supply Chains Face – Alignment and Collaboration



Source: Deloitte Insights, 2018, "The Fourth Industrial Revolution is here..."



The Triple-A Supply Chain

The competitions of the future will be supply chain
Vs supply chain

- The top-performing supply chains possess three very different qualities*
 - **AGILE** - They react speedily to sudden changes in demand or supply.
 - **ADAPTABLE** - They flex over time as market structures and strategies evolve.
 - **ALIGNED** - They are aligned and support the requirements of all the firms in the supply network.

- *Lee, Hau, L., The Triple-A Supply Chain, Harvard Business Review, October 2004, Page: 102-112.

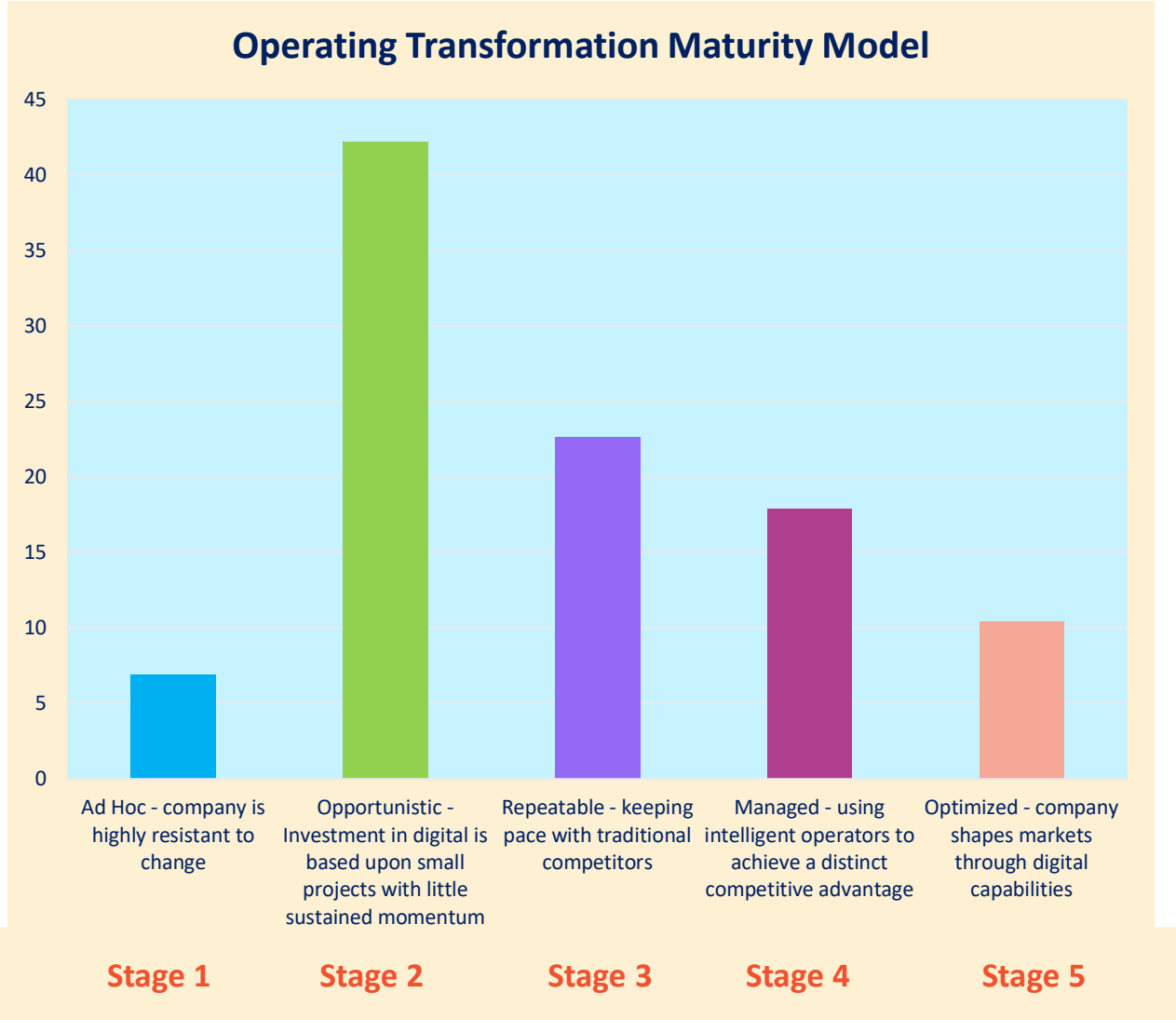
Getting to Supply Chain 4.0

	Past	Present	Future
Collaboration	Transactional	Relationship-based	Intelligent Value Co-creation
Optimization	Functional	Process	Systemic
Information	Hoarding	Sharing	Synthesis
Relationships	Adversarial	Collaborative	Vested
Demand	Forecasting	End-casting	Shaping
Integration	Vertical	Virtual	Flexible Networks
Technology	Dumb	Smart	Autonetic

Ref. Closs, David, "Mega Trends for Supply Network Capabilities", Michigan State University, 12th Annual Supply Chain Conference



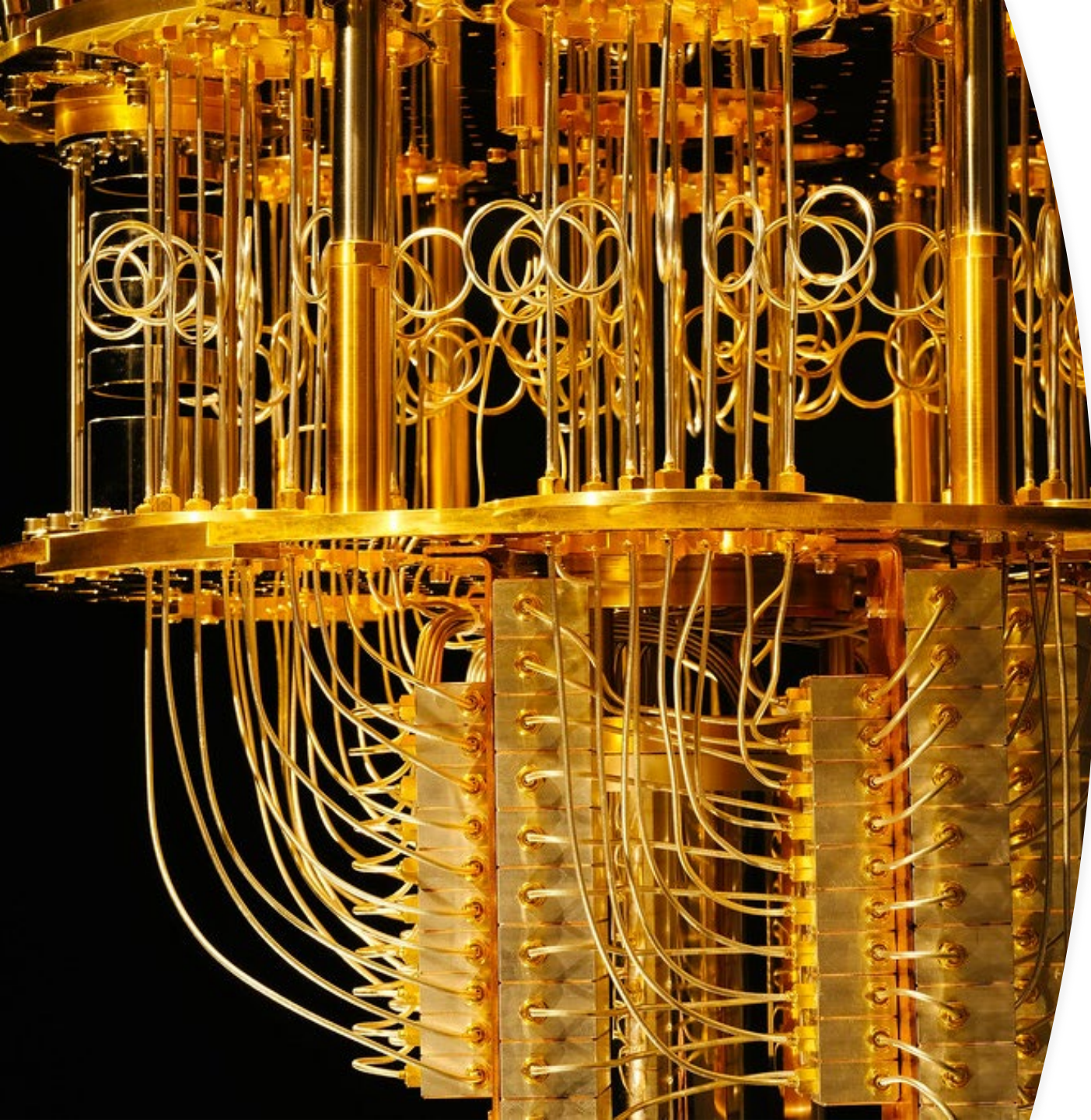
UPS Survey Results – Most Companies are in Early Stage Adoption of Operational Transformation



Break down of relative maturity with respect to operating model transformation to digital.

Impact:
Those companies that are aggressively pursuing operating model transformation enjoy 26% higher profits.

A Supply Network Maturity Model Scale



Bottom Line for Supply Network Integration

We are entering a digital enterprise era

- It is critical to understand the relationship of Data to Information to Knowledge to Wisdom

Two fundamental building blocks:

- **Internal: Information Integrity and Risk**
 - What level of information integrity is the MOST cost effective?
 - Have you “De-risked” Your Supply Network?
- **External: Information Visibility and Agility**
 - What level of information are you willing to SHARE across your Supply Network?
 - How Agile are your processes?
 - Are you aligned across your value chain

Keys to Alignment of the Canadian Value-Chain

- Design processes around Desired Customer Outcomes (DCOs)
- Ensure everyone understands the priorities and KPIs
- Set meaningful goals across the value chain that are measurable and drive the DCOs
- Build in transparency
- Create and execute a two-way communication strategy
- Build processes that are organic to the DCOs
- Identify and co-manage key risks