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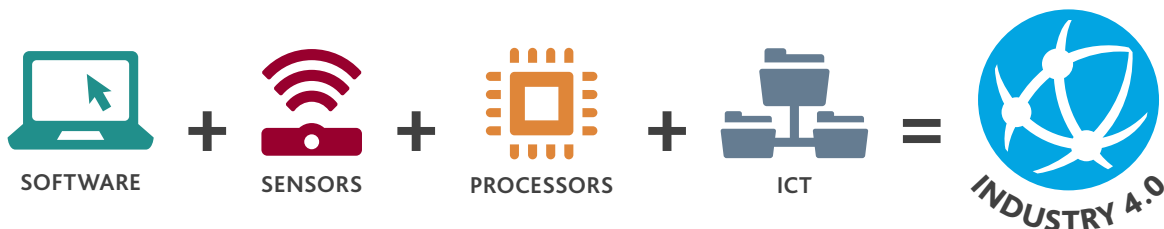
INDUSTRY 4.0: HOW CANADIAN MANUFACTURERS CAN FUTURE-PROOF THEIR BUSINESS

Industry 4.0 is transforming manufacturing in Canada, as digital tools and technology become more accessible and cost-effective. While it's an exciting time for the manufacturing sector, the rapid change combined with resource and organizational challenges has made this new industrial revolution uncertain and overwhelming for many business owners.

What is Industry 4.0?

Industry 4.0 is a journey towards a fully-connected business ecosystem that is continuously improving and evolving. From its beginnings as a massive automation and digitization program, Industry 4.0 grew out of numerous technological advances in four main categories: software, sensors, processors, and information and communications technology (ICT). ICT involves the digitization of data (information technology) and the advancement of networks, Wi-Fi, wireless and Bluetooth capabilities (communications technology).

The Industry 4.0 path can mean different things to different organizations and stakeholders, depending on their goals and technological readiness. Universally, however, manufacturers across the globe are realizing new opportunities for cost reductions, improved product quality, new revenue streams and service differentiators that make them more competitive.



The challenges for Canadian manufacturers

While some *Fortune 500* manufacturers began the Industry 4.0 journey a number of years ago, companies in the middle market — and in Canada in particular — have struggled to fully realize a path to digital transformation.

For many owners and executives in the manufacturing sector, especially those at the smaller enterprise level, Industry 4.0 can seem like an insurmountable undertaking. Developing the right strategy is just the first major hurdle. Companies also need to find the necessary funding and engage appropriate resources to drive the plan forward and deploy new initiatives.

Four ways Industry 4.0 can help middle-market manufacturers

According to studies from Canadian Manufacturers and Exporters (CME) and PLANT magazine, the Canadian manufacturing industry is facing a number of issues, including talent shortages, productivity, the cost of business and development, and adapting new technologies. Industry 4.0 initiatives can solve many of these problems, including these four key benefits:

1. **Cost savings and productivity.** With increasing pressure to produce quality products for lower costs, manufacturing companies must find ways to do more for less. New technologies such as robotics, data analytics, and embedded sensors can eliminate time-wasting procedures and improve efficiencies.

One Canadian steelmaker solved a longstanding operational challenge by using predictive analytics. Using historical data to create a proof of concept, the company predicted the output of its blast furnace to a 90% accuracy rate two hours into the future. The plant was able to course correct on problems in advance, reduce energy costs, and optimize product quality and operational efficiency. To learn more about how BDO helped this manufacturer, contact our team.

2. **New business models and revenue streams.** The cost of doing business in Canada is high, due to wages, energy costs, regulatory compliance, and other factors. Canadian manufacturers who have difficulty competing on price need to differentiate themselves through innovative products and services.

Industry 4.0 opens up new pathways to doing business, such as monetizing data through subscription services, equipment rental, and service on products to capture the after-sales market.

3. **Value enhancement.** Over the next 15-20 years, a large percentage of Canadian companies will come under new ownership, either through business succession or sale. Initiatives such as scheduling algorithms, simulation tools, and predictive maintenance can increase innovation and product quality — which in turn raises the intrinsic value of the company. As today's business owners begin to look to the future, implementing Industry 4.0 tools now can help preserve their legacy.
4. **Shared best practices and better communication.** Traditional manufacturing has struggled with issues related to a lack of centralized management, operational silos, and fragmented data. As cloud computing, edge computing, and plant and corporate systems become more sophisticated, digital factory strategies are more accessible and affordable. Managers and plant operators are able to collaborate across multiple locations, consolidate and interpret data, and share information directly from their workstations.

Building an Industry 4.0 Roadmap

NAFTA trade talks and other economic events have highlighted the manufacturing sector's concentration on the U.S. market and the subsequent need to develop diverse business opportunities. To stay competitive both domestically and on the global stage, Canadian manufacturers need to be proactive about their Industry 4.0 transformation and implementing digital initiatives.

While both the journey and the end state look different for every organization, the roadmap to Industry 4.0 consists of six stages.

1. Evaluate your current state

- ▶ Conduct a holistic assessment of your company's resources, information systems, organizational structure, and culture to determine where you stand on the Industry 4.0 Maturity Model.
- ▶ Examine your organization's readiness across its main functions: development, production, logistics, services, and marketing/sales.
- ▶ Identify any gaps, such as cybersecurity and IT systems, the availability of a data analytics program, or a workplace culture that supports flexibility and adaptation. Some areas of your business may be higher or lower on the Maturity Model index than others.

2. Create your vision

- ▶ Your company's unique Industry 4.0 vision should include the organization's present state and desired outcomes. Set priorities based on strong, tangible returns.
- ▶ Formalize benchmarks and KPIs. According to the CME, approximately 90% of manufacturing companies do not engage in benchmarking their operations against industry leaders. Measuring your progress against the current state of your competition or the industry as a whole will provide valuable insights and improvement opportunities.

3. Secure funding

- ▶ Be proactive about creating a funding blueprint. Companies who are the most successful adopt a forward-looking approach and present a strong business case.
- ▶ Government programs are available to Canadian companies based on a project's technology readiness level.

4. Identify stakeholders

- ▶ Engage internal and external stakeholders who will work collaboratively to drive initiatives forward. Assign clearly defined roles.
- ▶ Internal stakeholders should include a cross-section of employees from multiple levels and functions: executives and senior leadership, HR, production, logistics, finance, sales, etc.
- ▶ External stakeholders may include suppliers and customers who will be impacted by your projects, and third-party experts who can assist with planning and implementation.

5. Set up your pilot

- ▶ Focus on solving a concrete business problem or operational bottleneck. Digitization often begins by taking small steps and building to a larger goal over time.
- ▶ Follow the three "i's" of Industry 4.0: make your project incremental, iterative, and integrated. Leave room for flexibility and adaptation, and work to minimize organizational barriers.

Industry 4.0 Middle Market Maturity Model

LEVEL 5 Adaptable Ecosystem	<ul style="list-style-type: none"> ▶ Data monetization ▶ Inter-company planning & collaboration ▶ End-to-end process management ▶ Prescriptive analytics/robotics 	Consider new revenue streams and increase collaboration and value co-creation with customers, suppliers and vendors
LEVEL 4 Integrated Value Chain	<ul style="list-style-type: none"> ▶ Integrated performance management ▶ Formation of digital thread ▶ Process automation ▶ Predictive analytics 	Focus on third-party systems integration and end-to-end visibility, with heavy consideration given to controls and cybersecurity for information sharing
LEVEL 3 Integrated Enterprise	<ul style="list-style-type: none"> ▶ Collaborative planning ▶ Standardized ERP suite ▶ Consolidated business intelligence/data warehouse ▶ Vendor information sharing 	Integrate data with operations to automate processes, optimize performance and improve decision-making agility
LEVEL 2 Breaking Down Silos	<ul style="list-style-type: none"> ▶ Collaboration by exception ▶ Connected data & devices ▶ Share data upstream or downstream ▶ Pockets of process-level analytics 	Connect disparate data sources and operational systems to enable crossfunctional collaboration and visibility
LEVEL 1 Stovepipe	<ul style="list-style-type: none"> ▶ Organizational and operational silos ▶ Islands of technology and data ▶ Manual and non-standard processes 	Explore IoT opportunities and focus on data governance and information sharing across the critical, high value processes

6. Prepare your processes and your people

- ▶ Map your initiatives to existing processes and relationships (both internal and external), incorporating the effect on various departments, possible roadblocks, and test plans into your project.
- ▶ Design a strong change management strategy. Engage your employees in the process, communicate clear expectations, and provide resources for training and development.



Choosing an Industry 4.0 partner

To successfully create and implement an Industry 4.0 roadmap, manufacturers need to develop strong partnerships and establish forward-thinking strategies. BDO's team of [manufacturing industry experts](#) and service professionals can help you define and meet your unique vision and goals, with end-to-end solutions that include:

- ▶ Technology Advisory Services
- ▶ Advanced Analytics
- ▶ Procurement
- ▶ Risk Advisory
- ▶ Government Incentives
- ▶ Transformation and Change
- ▶ Strategy and Operations
- ▶ Cybersecurity
- ▶ Business Process Enhancement

[Contact us](#) to learn how BDO can help your organization build a comprehensive Industry 4.0 strategy, or to learn more about our [manufacturing services](#).

TO LEARN MORE ABOUT HOW BDO CAN HELP YOUR ORGANIZATION, PLEASE CONTACT:

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