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# ABB Canada Artificial Intelligence Hackathon

Envision. Innovate. Design.

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**We are living through an information technology revolution, set against the context of sustainability, energy concerns and the fourth industrial revolution – the meshing of the digital world of people and machines, as internet meets production.**



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# ABB Canada Artificial Intelligence Hackathon

## Envision. Innovate. Design.



The ABB Canada Artificial Intelligence (AI) Hackathon is about shaping the industries of the future empowered by AI, by using machine learning to solve real-world challenges, with data.

Over 48 hours, the participants are challenged to work in teams to ideate, collaborate, design, rapidly prototype, test, iterate and pitch their solutions. The event is an opportunity to be at the forefront of digital innovation, to understand key industrial challenges and co-create solutions with leading players in Montreal's Artificial Intelligence landscape.

We are at a time of unprecedented change, a shock wave in the form of a new industrial revolution is taking place. It's transforming the foundations of how we power, work, transport and live. It's blurring the lines between suppliers, producers and consumers and, in some cases, between whole industries as they shift.

Technological change is creating historic shifts in industry footprints, and this process will only accelerate in the years to come – This is just the starting point.

The future of industry is digital, and Canada has what it takes to become a digital champion. Our industrial sectors are flowing with untapped potential. We hope this hackathon provides a starting point to embark on a journey to shape Canada's industrial future.

**Let's write the future. Together.**

A handwritten signature in blue ink, appearing to read 'Nathalie Pilon'.

Nathalie Pilon, President, ABB Canada

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## Challenge areas

### **Data track**

Participants work in teams of three and are tasked with developing an algorithm for processing significant amounts of data and creating machine learning models to solve current industrial challenges. This track will host comprehensive workshops on analyzing and utilizing data sets to generate business value.

### **Innovation track**

Participants work in teams of three and are tasked with developing the concept and prototype for new smart building products and solutions. This track will host a series of innovation and conceptualization workshops and result in the creation of innovative solutions and prototypes.



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# Track one – data challenge

## The future of mining

In a challenging market, the digital transformation of mining companies has become a business imperative – leveraging technology to improve processes is directly linked to value creation. A combination of market volatility, increased cost base and changing global demand is driving a seismic shift in the industry. In response, mining companies are shifting their strategies and adopting new business and operating models faster than ever before. To seize the opportunity, miners are embracing digital tools and capabilities, including cloud-enabled mobility, big data-powered analytics and the Industrial Internet of Things (IIoT).

Mining companies need to find new and innovative solutions to existing problems to reduce the cost per ton produced. They also need to extend the lifetime of existing mines and increase the rate of operations while minimizing the impact of operations on the environment.

With over a century of leading in mine process, control and electrification, ABB is building the future of mining by transforming the way mines operate using our extensive digital solutions portfolio to realize an operation that is safe, clean and sustainable.



The key to the future of mining lies in total integration of data and work processes to channel more information from real-time systems into software, leading to enhanced efficiency, responsiveness and profitability across the mining value chain. The mining cycle is composed of a few major steps: location preparation, drilling, blasting, loading and hauling. All of these operations need to be carefully planned and executed in order to maximize efficiency and responsiveness across the whole mining chain.

The time taken to drill a hole depends on several factors – type of bit, drill diameter, rotation speed, the properties of the location of drilling, equipment being used, etc. Using this data, the hackathon challenge is to come up with a predictive model that can provide an accurate estimate of the time required to drill a hole.

# Track two – innovation challenge

## The future of emergency lighting systems powered by IoT

Even an industry as specialized as emergency lighting is not immune to the onset of the digital revolution. In fact, several developments such as fully integrated smart building automation, and a heightened need for safety, are pointing to a technology-transformed future.









ABB is a global manufacturer of emergency lighting (EML) and exit signs, with a global Technology Development Center (TDC) located right here in Montreal. ABB's emergency lighting products feature innovative technologies that provide top performance, reliability and cost efficiency.

The general mandate of Montreal's TDC is developing a new global IoT EML platform.

Many solutions within our product lines already feature wired and wireless communication, which are both used for monitoring. Utilizing IoT allows new connectivity levels where new "objects" will be interconnected to facilitate higher levels of safety and security.

The focus of this hackathon challenge involves envisioning the future of emergency safety systems powered by IoT.

### Partners

	<b>ArcelorMittal</b> Partner	ArcelorMittal is the world's leading steel and mining company. Guided by a philosophy to produce safe, sustainable steel, it is the leading supplier of quality steel products in all major markets including automotive, construction, household appliances and packaging.
	<b>SEED AI</b> Workshop facilitators	SEED AI helps organizations of all sizes and maturity in their adoption of data science and artificial intelligence, translating their business needs into technical solutions.
	<b>Stradigi AI</b> Judge and coach	Stradigi AI is a leading artificial intelligence solutions provider, powered by one of Canada's largest applied research labs. Stradigi AI is committed to bringing excellence & smarter results to enterprises and governments.
	<b>Montreal AI Ethics Institute</b> Speaker	Montreal AI Ethics Institute strives to help define humanity's place in a world increasingly characterized and driven by algorithms. They do this by creating tangible and applied technical and policy research in the ethical, safe and inclusive development of AI.
	<b>Kondition</b> Wellness sessions facilitators	Kondition is a corporate wellness group that aims to educate and inspire everlasting habits to live your best day every day! They bring their mission to life by creating lasting relationships, building a community with consistent collaboration and care.
	<b>BCF Ventures</b> Judge	BCF Ventures, a spin-off of BCF Business Law Firm, is a pioneer in the Canadian investment scene by being one of very first Super Angel Funds. BCF Ventures invests at the pre-seed stage and seed stage of technology-based startups, mostly in Canada, the United States and opportunistically in Europe.
	<b>Peck Tech Consulting</b> Judge	Through an in-depth understanding of technology applications in mining, Peck Tech provides expertise to assist customers to define their specific needs and requirements to solve defined problems prior to identifying specific products.
	<b>ABB</b>	ABB is a pioneering technology leader that works closely with utilities, industry, transportation and infrastructure customers to write the future of industrial digitalization and realize value.



**Speakers**

**Eric Deschenes**, Executive Vice President –  
Electrification Business, ABB Canada

**Paul Bird**, General Manager, Human Resources  
and Integrated Services, ArcelorMittal

**Mayor Alan DeSousa**, Saint-Laurent,  
City of Montreal

**Marco Blouin**, General Director, Science and  
Innovation Sector, Québec Ministry of Economy  
and Innovation of Quebec

**Jean-Frédéric Lafaille**, Vice-President –  
Policy and Communications, Canada Economic  
Development for Quebec Regions

**ABB**

ABB is a pioneering technology leader with a comprehensive offering for digital industries. With a strong history of over a hundred years of Canadian innovation, ABB today is a leader in digital industries with four customer-focused, globally leading businesses: Electrification, Industrial Automation, Motion, and Robotics & Discrete Automation, supported by its common ABB Ability™ digital platform. With its Canadian corporate headquarters in Montreal, ABB Canada operates close to 50 facilities and employs approximately 4,000 people across the country. [www.abb.com/ca](http://www.abb.com/ca)

**Let's write the future. Together.**



# Agenda

<b>Friday</b>	
<b>1:00 - 1:30 pm</b>	Arrival of students to ABB Montreal campus
<b>1:30 - 3:00</b>	Customer Innovation Center (CIC) and Research, Development and Assembly (RDA) Tour
<b>3:00 - 5:00</b>	Ideation session Industries of the future powered by AI: <b>Envision. Innovate. Design.</b>
<b>5:00 - 5:30</b>	Event launch and registration (5 à 7)
<b>5:30 - 6:10</b>	<b>Opening Remarks</b> <b>Eric Deschenes</b> , Executive Vice President – Electrification Business, ABB Canada <b>Paul Bird</b> , General Manager, Human Resources and Integrated Services, ArcelorMittal <b>Mayor Alan DeSousa</b> , Saint-Laurent, City of Montreal <b>Marco Blouin</b> , General Director, Science and Innovation Sector, Québec Ministry of Economy and Innovation of Quebec <b>Jean-Frédéric Lafaille</b> , Vice-President – Policy and Communications, Canada Economic Development for Quebec Regions
<b>6:10 - 7:00</b>	ABB and customer challenge presentations
<b>7:00 - 7:30</b>	Team submission/track selection
<b>Saturday</b>	
<b>7:30 am</b>	Shuttle pick up from downtown to ABB Campus Montreal
<b>8:00 - 8:30</b>	Breakfast
<b>8:30 - 9:30</b>	Hackathon workshop #1
<b>9:30 - 11:30</b>	Hacking
<b>11:30 - 12:15</b>	Motivation exercise
<b>12:15 - 1:00</b>	Lunch
<b>1:00 - 3:00</b>	Hacking + coaching touch base #1
<b>3:00 - 3:30</b>	Meditation exercise
<b>3:30 - 4:30</b>	Hackathon workshop #2
<b>4:30 - 6:30</b>	Hacking
<b>6:30 - 7:30</b>	Dinner
<b>7:30 - 10:30</b>	Hacking + coaching touch base #2
<b>10:30 pm</b>	Shuttle from campus to downtown
<b>Sunday</b>	
<b>7:30 am</b>	Shuttle pick up from downtown to ABB Campus Montreal
<b>8:00 - 8:30</b>	Breakfast with ABB and customers
<b>8:30 - 9:30</b>	Hackathon workshop #3
<b>9:30 - 12:00</b>	Hacking + coaching touch base #3 + presentation preparation
<b>12:00 - 12:30</b>	Lunch
<b>12:30 - 2:00</b>	Hacking + presentation submissions
<b>2:00 - 2:30</b>	Closing ceremony kick-off
<b>2:30 - 3:45</b>	Team presentations
<b>3:45 - 4:30</b>	<b>Special discussion</b> Montreal AI Ethics Institute: Sustainability, Diversity and the Future of Jobs
<b>4:30 - 5:45</b>	Team presentations
<b>5:45 - 6:15</b>	Judges deliberation
<b>6:15 - 6:30</b>	Winner announcement
<b>6:30 - 7:30</b>	Celebration cocktails