# YALETOWN

## Intelligent Industry:
### Canada's Bet On Cleantech's Future

*By: Salil Munjal, Partner & Eric Bukovinsky, Partner*

Canada is poised to become a global leader in the next generation of clean technology applications. However, the opportunity resides not in clean technology's historical promises of disruption but rather in Cleantech 2.0, the Intelligent Industry: empowering traditional industries to become more intelligent, efficient and productive through the adoption of communication and software technologies. Proof of Canada's bright future is being forged at the cutting edge of the Industrial Internet of Things.

## From Information Technology to the Intelligent Industry

Over the last three decades, the Internet Age brought significant gains in human capital and knowledge-worker productivity to traditional enterprises, shaping the information technology sector of today's global economies. The catalytic changes were rooted in a diverse set of advancements across software, communications, and computing technologies. Fast-forward to today, a new wave of next generation technologies, including Cloud Computing, Big Data, Advanced Analytics, and On-demand Software are providing novel advancements in scale, efficiency and productivity for the knowledge-worker while simultaneously driving rapid declines in costs to adopt and utilize computing infrastructure. These technologies have broken down historical silos and, for the first time, enabled an opportunity orders of magnitude larger: unlocking intelligence and productivity in capitally intensive industrial and resource sectors.

Historically, the clean technology and the information technology sectors operated independently. Software for industrial applications were considered "vertical market," synonymous with specialized solutions addressing a smaller, niche market. However, with the next generation technologies now able to introduce solutions to different platforms and use cases, the two are no longer separate sectors. Instead clean technology and information technology are interwoven as a part of broader innovation themes: the Intelligent Enterprise and the Intelligent Industry. Both themes deliver productivity

improvements to human and physical capital across the Internet of People and the Internet of Things, while leveraging the next generation of technologies as the core enablers of change.
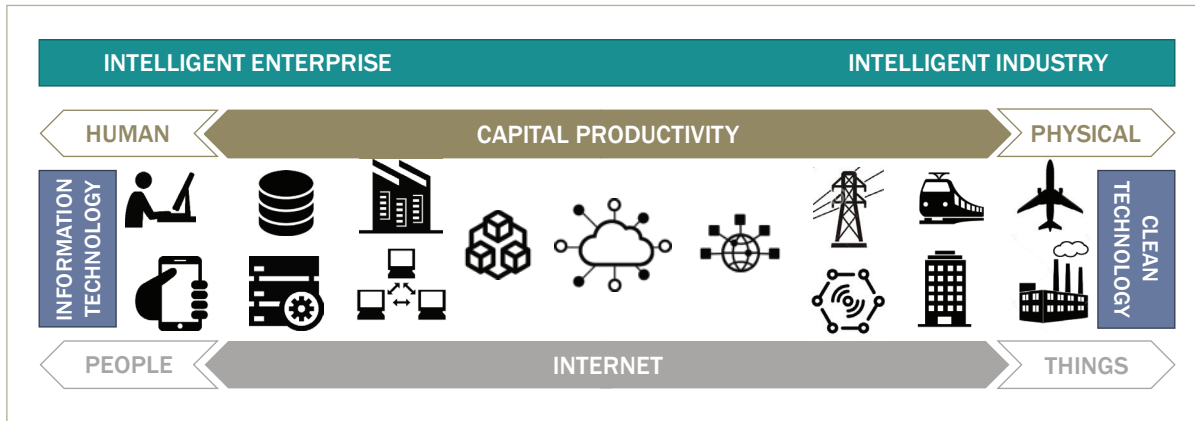


Source – Yaletown Partners

Fundamentally, Intelligent Industry represents the software opportunity of Cleantech 2.0. This theme recognizes that industrial and commercial customers in a diverse range of industries including oil and gas, natural resources, agriculture, power generation and distribution, manufacturing, and transportation, are seeking to improve their operational productivity and efficiency.

The corresponding improvements in productivity of physical capital, infrastructure, and other asset-intensive operations will lead to a reduction of natural resource consumption and carbon intensity, optimizing asset efficiency, and minimizing the output of undesirable by-products such as waste materials and environmental pollutants, especially those that that contribute to global climate change.

## The Intelligent Industry Cycle

The opportunity of the Intelligent Industry will play out over three phases. First, the Industrial Internet of Things will set the stage for adoption and enable the introduction of software and services relying on the data generated by connected industrial devices, sensors and systems. Next Generation Manufacturing and Industrial Operations will follow as software and services introduced by the Industrial Internet of Things allow for productivity improvements of physical assets, including resource inputs and machinery, through process optimization and automation. The foundations established by the first two phases will enable true Climate Resilient Growth and Development where resource efficiency improvements drive environmental sustainability.

## Phases of Intelligent Industry

The convergence of software, communications, cloud, and data technologies with capital-intensive industries will foster the development of these next phases of cleantech 2.0.

**Industrial Internet of Things**
*Applying software and services to the data generated from connected industrial devices, sensors, and systems*

The Industrial Internet of Things phase currently underway represents the start of Cleantech 2.0. The number of monitoring and control points connecting industrial and commercial infrastructure to the Internet is expected to reach at least 30 billion by 2020, ten times the size of the current Human Internet, with the potential to generate almost $9 trillion in new revenue.

**Next Generation Manufacturing & Industrial Operations**
*Enabling productivity improvements of physical assets through automation*

Next Generation Manufacturing and Industrial Operations represents the second phase beginning to gain momentum. Highlighted by predictive maintenance, physical asset optimization and automation, this phase enables industrial enterprises to improve upon products and business practices through full digital transformation. An excellent example today is the automotive sector. Developing highly complex software for embedded systems across the supply-chain has become a primary driver for constant product improvement and management of high-efficiency combustion, hybrid and electric vehicles.

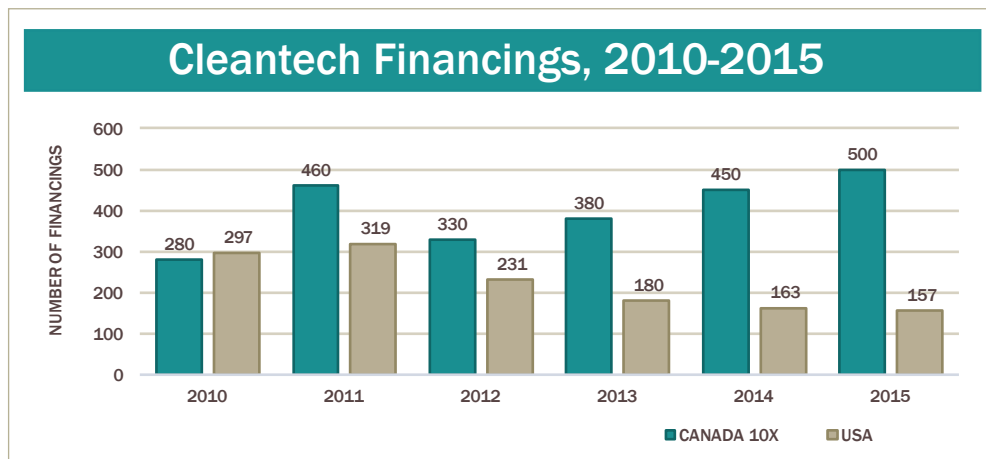**Climate Resilient Growth & Development**
*Advancing environmental sustainability by reducing resource consumption and enhancing resource efficiency*

Climate Resilient Growth and Development represents the third phase of the Intelligent Industry and the focus on sustainability and resource efficiency. While opportunities to address sustainability and resource efficiency are well established today within industrial applications, the impact and accelerated adoption speed of sustainable business practices will foster once information and technology barriers are lowered as the first two phases play out. This is the original promise of clean technology, renewed and delivered through the Intelligent Industry.

> *While opportunities to address sustainability and resource efficiency are well established today within industrial applications in Canada, in the third phase of intelligent industry ahead we'll see accelerated adoption once information and technology barriers are lowered*

## Canada's Opportunity

Canada is well positioned to succeed due to its long history of successful information and communications technology companies and well-established clean technology ecosystem. Significant homegrown demand from nationally critical resource and manufacturing sectors have required the country to be a first adopter. Canada aims to be a global sustainability leader, as demonstrated by the Paris Accord and the Vancouver Agreement. Capitalizing on the Intelligent Industry opportunity is the pathway to reinvigorate the country's clean technology ecosystem while making great strides to develop a more robust Innovation Economy.

**Cleantech Financings, 2010-2015**

| Year | CANADA 10X | USA |
|------|-----------|-----|
| 2010 | 280 | 297 |
| 2011 | 460 | 319 |
| 2012 | 330 | 231 |
| 2013 | 380 | 180 |
| 2014 | 450 | 163 |
| 2015 | 500 | 157 |

NUMBER OF FINANCINGS

Source – Thomson Reuters

Historically, Canada has been a major player in clean technology. Since 2010 Canada has increased its financing activity while the US has seen significant declines. In 2015, Canada completed more than three times as many financings on a normalized basis. Now, Canada is uniquely positioned to become a leader in the Intelligent Industry. One of Canada's primary advantages is a large, domestic customer base from the resource and manufacturing sectors. For example, BC Hydro and Hydro Quebec are pioneers in adopting smart grid technologies and now serve as case studies globally. In addition, Canada has established centres of excellence and are attracting global industrial players to take advantage of the country's unique research assets, tax incentives, commercialization grant funding through SDTC, lower cost of operations.

*This is the original promise of clean technology, renewed and delivered through the Intelligent Industry*

## Profile of Yaletown Investments

Yaletown is Canada's leading Intelligent Industry investor. Yaletown's globally recognized portfolio has generated significant returns, attracting numerous awards and top investment syndicate partners from the United States including GE, Cisco, Austin Ventures, and Elevation Partners. Two of Yaletown's portfolio companies successfully executing on the Intelligent Industry theme are highlighted below.

**BITSTEW**
**SYSTEMS**

## Bit Stew Systems

**Website:** www.bitstew.com
**Headquarters:** Vancouver, British Columbia
**Yaletown investment**: 2013

## The Opportunity

Adoption of Internet of Things technology is on the rise in industrial settings because technology adoption is now both affordable and easily available. Sensors and devices that generate data about industrial processes can be incorporated into a manufacturing process or hydro energy grid, for example, and feed critical data to cloud-based software systems for analysis, driving decisions that save time and potentially millions of dollars. The impact on capital-intensive companies results in higher productivity and better sustainability, reducing waste, input resources, and carbon intensity. The number of monitoring and control points connecting global industrial and commercial infrastructure to the Internet is expected to reach at least 30 billion by 2020, ten times the size of the current Human Internet.

## The Company

Bit Stew Systems develops the premier platform solving the data integration challenge in the Industrial Internet of Things. Bit Stew's technology platform handles complex data integration, data analysis, and predictive automation for connected devices in the Industrial Internet ecosystem.

## Example of Impact

### Airline maintenance and fuelling:
By monitoring millions of real-time data points from each aircraft flight, Bit Stew's platform facilitates the automation of ongoing maintenance needs, reducing downtime and maintaining the operating fleet at peak efficiency. Bit Stew's platform also correlates real-time fuel consumption with historical performance data to identify ways to eliminate fuel waste and lower input fuel costs.

### Utility maintenance and optimization:
BC Hydro implemented Bit Stew's platform on its smart meters as an operations dashboard to detect meter failure and diagnose the source and extent of an outage. Bit Stews software gathers data from millions of sensor devices around BC Hydro's network, aggregates and analyzes the data, assisting BC Hydro to make efficient maintenance and fix decisions for optimal use of energy and to best serve customers.

TTASKTOP

## Tasktop Technologies

**Website:** www.tasktop.com
**Headquarters:** Vancouver, British Columbia
**Yaletown investment**: 2013

## The Opportunity

Developing, implementing and managing embedded systems is at the core of the Intelligent Industry and a key driver for expanding Next Generation Manufacturing and Industrial Operations. Large-scale software delivery is one of the most challenging endeavors an organization can undertake; for industrial applications, often the software is significantly more complex and dependent on stakeholders across a multi-party supply-chain. Automotive development trends are creating the need for a whole new scale of software-centric innovation and are expanding the software in tomorrow's car beyond 200 million lines of code. But automotive suppliers don't have real control throughout their supply chain, with many having large numbers of software tools with no common standards. For auto manufacturers to be successful, they must get these tools to communicate with one another.

## The Company

Over one million users employ Tasktop's Software Lifecycle Management technology to transform software development and delivery. Tasktop unifies the software development and delivery team while providing unprecedented visibility into the business-critical processes of software delivery. Tasktop customers are the global leaders in financial services, insurance, government and manufacturing, and include 34 of the Fortune 100, 11 of the top banks in the world and five of the top ten US insurance companies. Partners, including Hewlett Packard Enterprise, CA and IBM, rely on Tasktop's independent, vendor-neutral role to connect their customers' software delivery disciplines via OEM distributions of our products.

## Example of Impact

**Auto manufacturing:** BMW Group adopted Tasktop's Sync solution for defect management of the automobile software supply chain. Tasktop's solutions provide real-time collaboration between BMW and its suppliers allowing BMW to speed product delivery through advanced simulations or through direct feedback on the test track. Auto manufacturers must meet tens of thousands of requirements across millions of lines of code. With Tasktop, a 10x efficiency gain in software development is achievable.

## About the Author

Yaletown Partners are a leading global and a top Canadian IoT and Cleantech investor focusing on Intelligent Industry companies. Yaletown's Intelligent Industry investments have generated significant returns, attracting top investment syndicate partners from the United States including GE, Cisco and Elevation Partners. Yaletown has been investing in the Intelligent Industry for over 5 years and is actively pursuing new Canadian opportunities that fit the theme.

Yaletown invests in emerging-growth technology companies in Canada that enhance sustainability and productivity for industrial and enterprise customers. Our research and investments help Canadian technology companies in their initial growth phase to accelerate their growth, shorten exit timeframes and achieve strong exit premiums. With team members in Vancouver, Calgary, Montreal and Toronto, Yaletown is led by a team with almost 100 years of technology-industry experience and is backed by leading institutional investors and a network of successful technology entrepreneurs, executives and angel investors. Find out more about Yaletown and our portfolio of companies at www.yaletown.com.