



**Vehicle** Technology  
CENTRE

Manitoba's Heavy Equipment and Vehicle Cluster

**Technology DRIVEN Manitoba MADE**

Creating B2B and B2A connection points to collaboratively:

- Ensure the future of heavy vehicle and equipment manufacturing in Manitoba.
- Prepare our current workforce for the digital and connected future
  - Align industry closer with academia for research, and skill development for our future employees.



# The VTC

## Vehicle Technology Centre

- Formed through a federal provincial partnership in 2002.
- Majority of the board is technical leaders of the largest company in the sector. They volunteer to be on the board.
- Mission – To foster technological advancement within Manitoba's HEV community and develop our workforce of the future.
- No bricks, no mortar, no administration, and up to Nov 2019 no contractors/employees, Executive director on loan from Manitoba Economy and Jobs and one contractor.
- VTC has had three evolutions:
  - Purchase and deployment of industry needed capital test equipment
  - OEM – Supplier Development program
  - Now on a European style clustering initiative

## HEV OEM Manufacturers

- We have over 25 HEV Manufacturers that maintain headquarters, design authority and decision making in Manitoba. Many of these businesses have been in the province 50 or more years.
- We have lots of companies building big things on rubber wheels facing many of the same challenges.
- 7500 direct manufacturing jobs, 12% of direct manufacturing workforce, \$1.6 Billion or 10% of provincial total exports spread across 3-4 NAICS codes
- Our companies are seen as technological leaders in their market segments and almost all are export oriented.



## Manitoba's HEV Sector



In Manitoba,  
we have  
riches in.....



## We have....

- North America largest transit and highway bus manufacturers here
- Canada's largest and only large 4WD tractor manufacturer here. Canada's largest Ag implement manufacturer is here.
- Canada's largest Motorhome, Fire Truck, and a host of truck trailers, Ag manufacturers, and speciality heavy equipment manufacturers are here.

## What do they have in common?

- Design Authority is in Manitoba (the really smart people (and great jobs) who design the vehicles)
- Low volume high value, high flexibility manufacturing but efficiently?

# Manitoba's Heavy Vehicle Manufacturing Cluster



# Manitoba's Heavy Equipment and Vehicle Manufacturing Cluster



**FORT GARRY**  
FIRE TRUCKS



**AIRPORT**  
**TECHNOLOGIES**  
INC



**LODE** **KING**  
INDUSTRIES

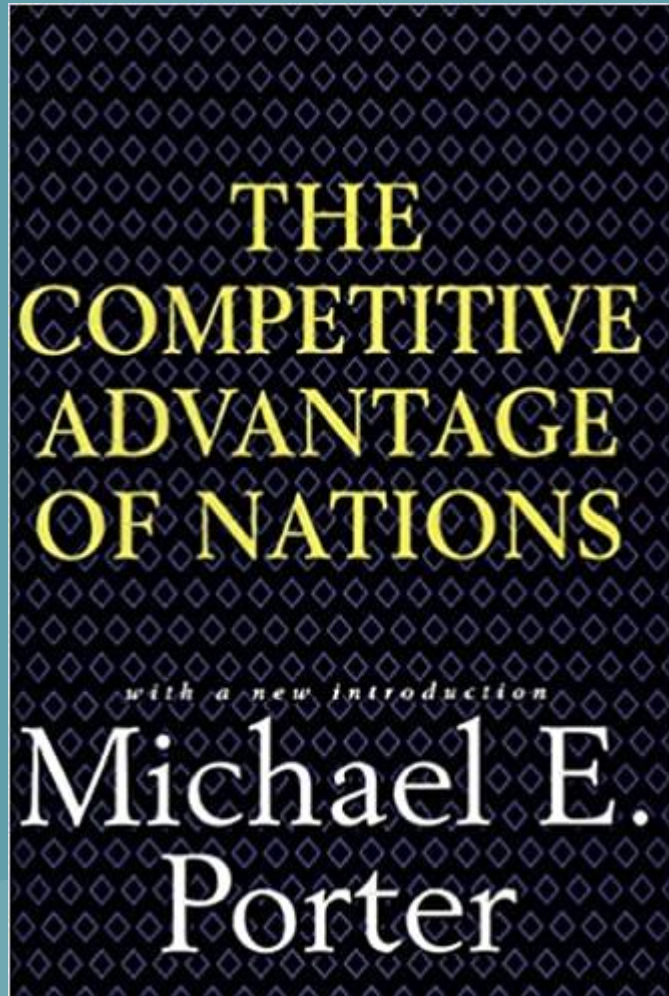


**LEISURE**  
TRAVEL VANS



**ARNE'S**

# VTC – Cluster Journey



## Inspiration

- Michael Porter writings in Harvard Business Review – April 1990
- Met Ifor and Sean Barr at Western Diversification hosted meeting which added substance to the HBR article.

## VTC began our journey in November of 2019

- Previously companies were essentially siloed, and academia was distant.



# VTC – Cluster Journey

Planning the journey.....

Step 1: Determine where we need to go.

Step 2: Determine what a Manitoba Cluster might/could look like:

Step 3: Created a cluster strategy (the underlying objective about every action is about creating connections)

# VTC – Cluster Journey



## What we realized.....

- Building large equipment and vehicles in a low volume, highly custom engineered process is extremely unique worldwide. Industry 4.0 (digital workplace) movement is going to look different.
- Our connection to academia had grown weak.
- Our products and production processes are going digital at a rapid pace radically changing the design and manufacturing skills needed now and in the future.
- The rate of technology acceleration is making product segment leadership more challenging to maintain and changing the product development skills needed.
- The path to zero emissions really looks different for the different vehicle types in our cluster.
- Manufacturing jobs are not thought of as career paths by job seekers.

# VTC – promoting industry conversations

## What has and is happening.....

- Technology awareness webinar series specific to low volume manufacturing, and HEV zero emissions  
Growth from 50 to 250 contacts.
- VTC formed and host 3 cross company special interest groups on heavy vehicle electrification, infrastructure barriers and skills.
- One multi company/academic research project underway, with 2 others in the process of forming.
- Multi company and academic collaboration leading to the first battery electric tundra buggy made in MB.
- VTC acts as industry gateway to NRC METALtec initiative and NRC national SME
- Through conversation, U of M developing heavy vehicle electrification research program. Exciting stuff!!!!!!
- Hosted VTC / RRC P biannual heavy vehicle technology conference in Dec. 2021.
- VTC Clean Tech Advanced Manufacturing Program

## VTC – What we do

### We do.....

- A lot of listening
- Acting on what we hear.
- Being the motor that turns Porter's triple helix of companies, academia, and government by acting on opportunities to collaborate that emerge.

Decarbonizing fleets is a targeted approach to reducing large amounts of greenhouse gas emissions

The HEV  
future is  
Green and  
connected.

- Federal and Provincial mandate to zero emissions is going to drive the need for the technology that is being developed locally.
- Decarbonizing fleets, trucking and agriculture is a place where I believe Manitoba can take the lead.
- Autonomous and connected heavy vehicles and equipment is another place where we can take a leadership role.

“The  
future is  
so bright,  
I gotta  
wear  
shades”

Timbuk3 - 1986

## Outlook.....

- Good news – Clustering effort is working
- Challenge – Supply chain issues are affecting almost every company.
  - Opportunity – Supply chain re patriation or near sourcing possibilities might be enticing.
- Challenge – Local labor shortage, manufacturing is not seen as a desired place to work.
  - Good News – We are exploring some concepts to solve this collaboratively. Researching HEV skills academy concept. Becoming more visible in technology schools. We are not your grandfather’s dead end manufacturing job.
- Good news – We have the chance to supply North America with low and no carbon, connected, and autonomous alternatives to current heavy vehicles and equipment available, designed and in most cases built here in Manitoba.

# Challenges ahead.....

- Retraining our current and future design and production workforce to give them the skills needed to thrive as we enter into this new digital product and process world.
- Learning how to lead in efficiency and time to market in low volume high value manufacturing.
- The engineering investment required to keep our heavy vehicle and equipment manufacturers at the forefront of their market segments to lead in
  - Low to zero emissions heavy vehicles
  - Connected and Autonomous vehicle and equipment technologies

Manitoba's Heavy  
Equipment and Vehicle  
Cluster

**Technology  
DRIVEN  
Manitoba  
MADE**



Thanks to the entire team at  
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cluster build.

**Ron Vanderwees**  
**President and CEO – VTC**  
**[rvanderwees@vtci.ca](mailto:rvanderwees@vtci.ca)**  
**P: 204-362-1678**