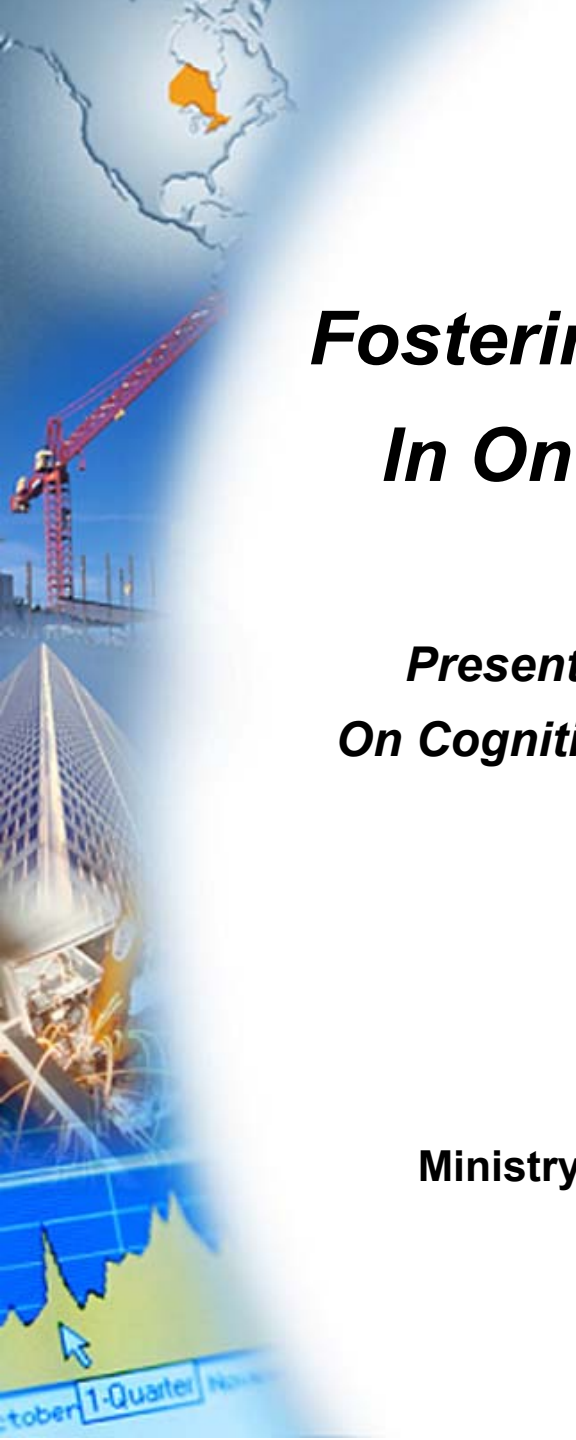


Fostering Innovation and Investment In Ontario's Automotive Industry

Presentation to The First International Workshop On Cognitive Dynamic Systems and Their Applications

May 26, 2008

Ministry of Economic Development and Trade - Ontario

Ontario Ministry of Economic Development and Trade

Ontario Automotive Industry

- *The auto industry has been in Ontario for over 100 years*
- *Free trade in automobiles and parts since 1965.*
- *Auto assembly hub in traditional Ontario-US MidWest automotive region: 1 in 6 vehicles built in NA*
- *Approximately 133,000 workers in the sector (but faced with market downturn and continuing restructuring)*
- *Largest single manufacturing sector*
- *Most diversified by assembler*

Ontario Automotive Strategy

- ***Anchored by Ontario Automotive Investment Strategy and successor (Next Generation of Jobs Fund)***
- ***News reports, media releases speak about Ontario's success or failure at investment attraction and retention.***
  - ***$7.5 billion in Investments committed in last 3 years***
  - ***Anchored major assembly plant investment***

- ***But there's a lot more going on…***

Collective challenge to the Auto Industry

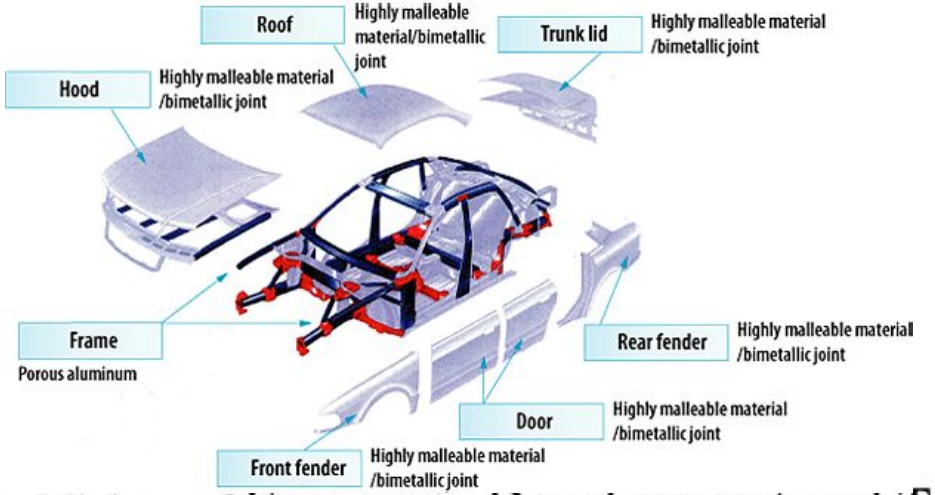
- **2020 fuel economy targets combined with all the other safety and emission targets as well as the usual market competition forces, represents significant challenges to all vehicle manufacturers, especially the Detroit 3.**

- **Governments at all levels in Both Canada and the United States are working with the industry, both indirectly and directly.**

The Automobile in 2020: Climate Change, Safety and Congestion

- **Mainline North American automobile models will be significantly different than mainline 2008 models**
- **The average 2020 vehicle will be 20-50% lighter than comparable 2008 models.**
- **Average electronic content > 50 % of the value of the vehicle.**
- **Fuel efficiency of the new model fleet > 45 MPG (US)**
- **Significant improvements to the ICE (gas and diesel) and penetration of electric hybrids.**
- **Vehicle and highway safety will be achieved through a combination of active and passive safety features.**
- **Vehicles will continue to experience real price declines relative to comparable 2008 models.**

The Automobile of the Future Will Use a Wide Variety of New Materials To Meet New Weight Requirements



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The Automobile of 2020

- **During the 2008 – 2020 period a number of alternative propulsion systems will be designed and marketed.**
- **It is almost impossible to state what form will dominate in 2020, a date that is only 3 auto product generations in the future.**
- **Depending on developments in alternative fuels technologies, including source, cost of conversion, distribution infrastructure, on-board storage systems, and final motive power, gasoline, diesel, electric-hybrids, plug-in hybrids, all electric, fuel cell electric, etc., can each be playing role(s) in specific applications.**

The Automotive Components of the Future

- **A wide variety of potential materials for body structures, the wide variety of electronic devices in the automobile, and the number of possibilities for alternative propulsion systems as being pursued.**

- **Indicate that a large amount of component research and development will be required to achieve vehicle performance targets.**

- **It is estimated that the US auto industry spends approximately $12 billion per year on developing new components, vehicles and production processes.**

The Automobile Production System of the Future

- **In order to manufacture all of the parts required to produce these advanced components and systems that will be assembled into these 2020 automobiles, billions of dollars of investment in advanced manufacturing processes will be undertaken.**

- **It has been estimated that this manufacturing investment bill could exceed $115 billion US$ before the year 2020 is reached.**

- **Before these manufacturing investments can be made, literally hundreds of research projects must be completed to finalize the production processes that will be used.**

Smart Cars versus Cognitive Cars

- **The climate change technological challenge is primarily about overcoming inertia, maximizing conversion of potential energy to kinetic energy, and substituting renewable for non-renewable energy sources**
- **Conflicts with safety**
- **Limited by driver behavior**

The Automobile of the Future Will Have Significant Cognitive Dynamic Systems

- **Cognitive systems may help to overcome these conflicts by making the driver better, overcoming limitations of the driver and facilitating communication with the infrastructure.**
- **The latter has significant public policy implications**

How Are Challenges Being Addressed In The United States

- FreedomCar co-ordinates US Government resources and USCAR plays similar role for US auto industry.
- FreedomCar providing $1.7 billion over 5 years (04 – 08)
- Work co-ordinated through Councils that prepare roadmaps and implement business plans.
- US companies, national labs and universities contribute resources and expertise. FreedomCar contributes cash.
- Ontario based companies can participate but no US Government funds can come directly to Ontario companies

How are challenges being addressed In Ontario?

- **The Ontario Government is engaged in ongoing examination of the capabilities of the Ontario Automotive Innovation System to ensure that it meets the innovation needs of the Ontario based vehicle and parts companies.**
- **Where gaps have been identified, new initiatives have been undertaken to address these gaps.**
- **In addition, Ontario has, via the Ontario Automotive Investment Strategy (OAIS) invested in significant industry led projects that resulted in new manufacturing plants and new R&D capabilities and activities.**
- **To address congestion and environmental burden Ontario has also committed to a $17 billion transit plan for the Golden Horseshoe.**

Ontario's Automotive Innovation System

- **Ontario has used the Research Excellence Program and OAIS to build up the capacity of the University research system to meet the needs of the auto industry.**
- **Federal Government has recently targeted automotive innovation. However, is more required, and how do we answer this question?**
- **For example, listed below are the challenges the industry must confront in using new materials:**

  Higher material costs; Higher part product costs

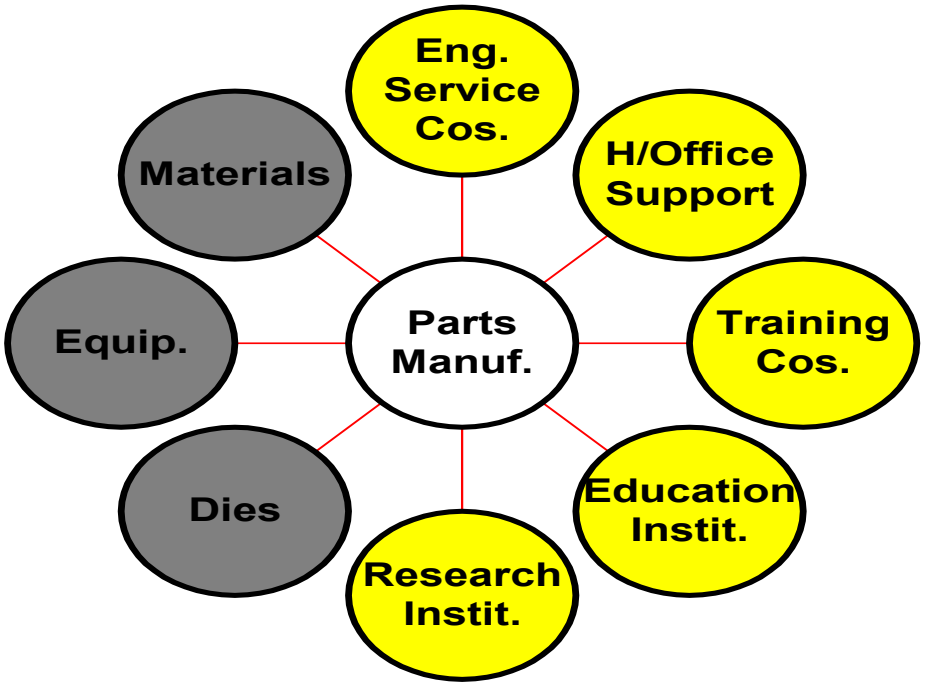
  Too many unknowns vs. current material/process

  Benefits too uncertain for effort required.

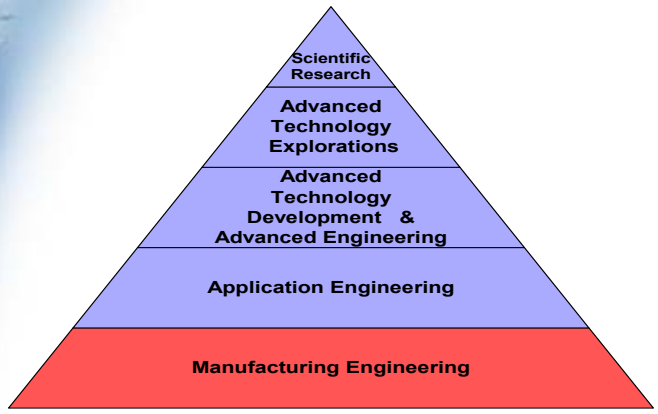
- **What can Ontario's Automotive Innovation System do to help the industry resolve these material challenges?**

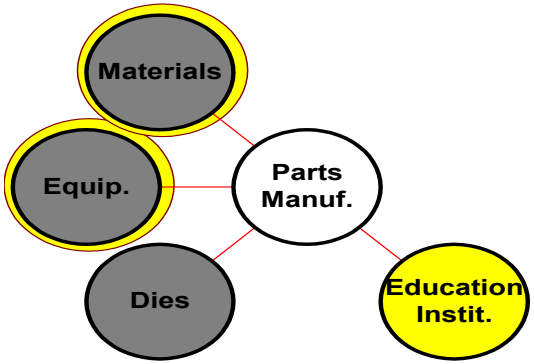
Role of the Automotive Innovation System

Companies depend on the innovation system to provide them with the resources and specialized facilities they need to develop innovation capabilities and undertake innovation projects.

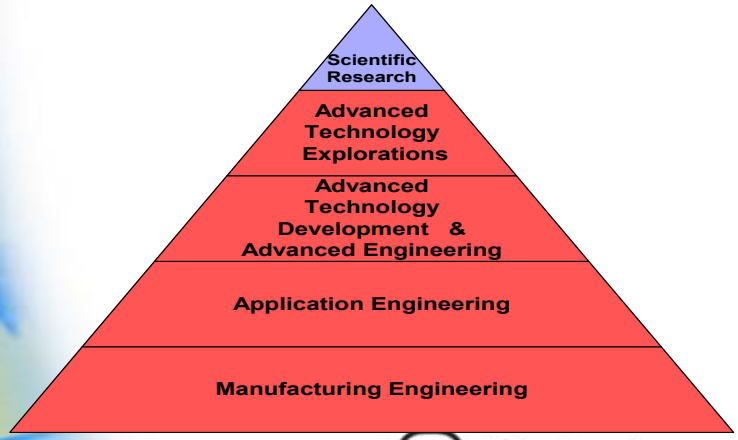


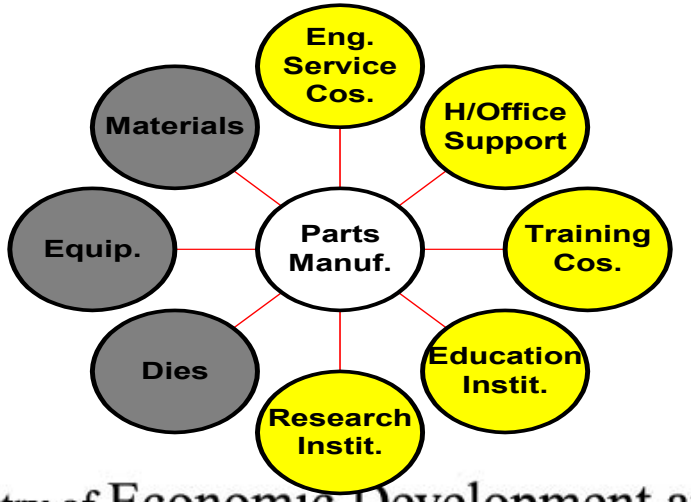
During the 1965 – 1995 period Ontario parts industry survived employing low to medium level process technology & demanded mostly "Hardware" innovation system products



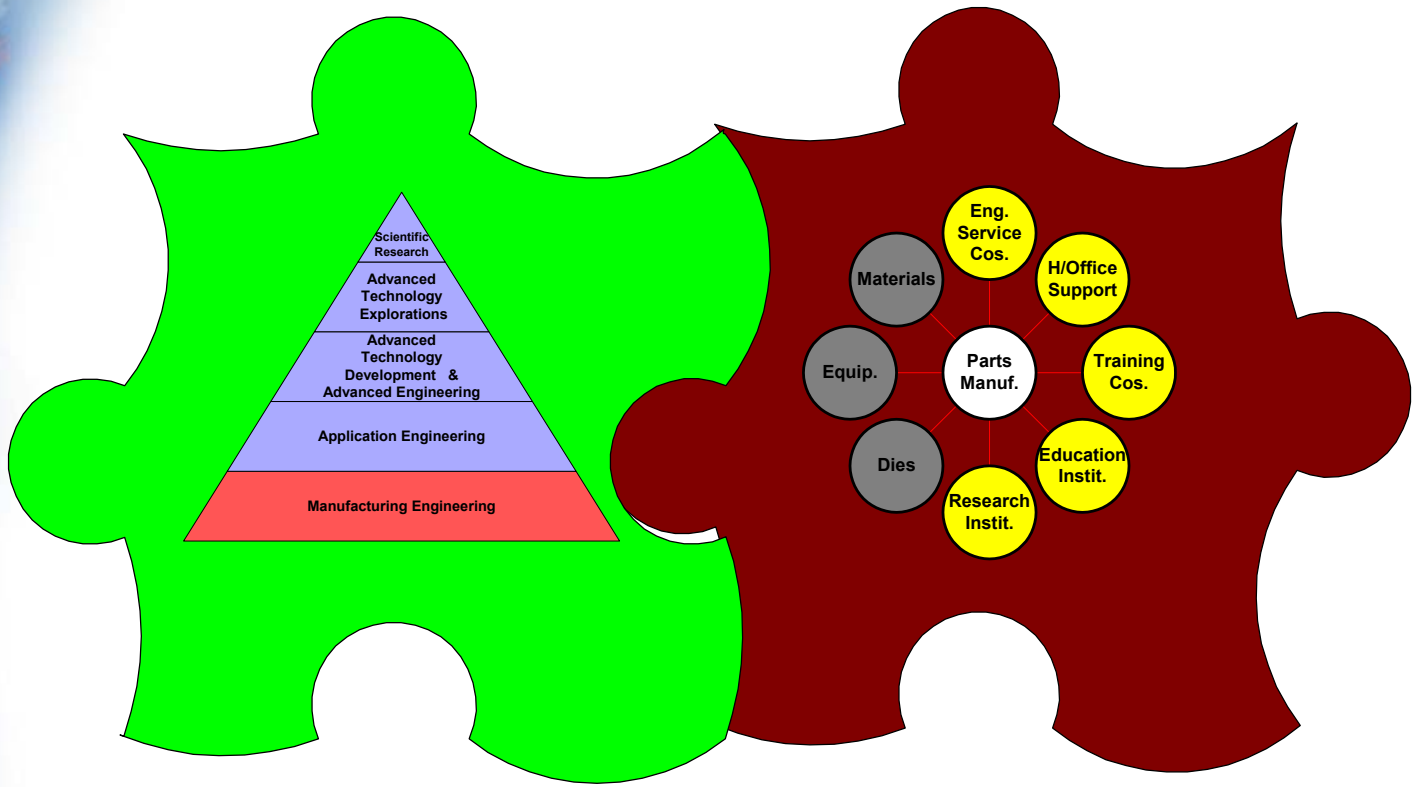


Ontario parts industry must now develop additional survival and next generation innovation capabilities. To do this they require new & specialized hardware and technology products & services





Must Be Exact Match Of Corporate Needs And Innovation Infrastructure Products and Services



Infrastructure products & services must supply, complement, and supplement the development & use of corporate innovation capabilities

Innovation Resources and Services Provided By the Innovation System

- **Highly qualified People**
- **Knowledge**
- **$**
- **Proximity to/alignment with non-automotive industries**
- **Specialized facilities**

Innovative companies will locate where these components are available.

Innovation System Components Ontario Can Influence

- **University Engineering Departments**
- **Community College Technology and Apprenticeship Departments**
- **Public Research Institutes**
- **Innovation Projects**
- **Private company innovation labs**

- ***Research institutions – ambassadorial role: gain window into international developments***

Examples of Ontario Initiatives to Strengthen Innovation System Components

- University Engineering Departments
  - Increased provincial support for engineering schools
  - Used Research Excellence Awards to develop new research capabilities supported by auto companies
  - Used OCE Inc. to support research projects undertaken by auto companies at universities.

Examples of Ontario Initiatives to Strengthen Innovation System Components

- **Community College Technology and Apprenticeship Departments**
  - **Increased funding for technology and apprenticeship departments**
  - **Increased support for apprenticeship training**
  - **Through OAIS have supported the establishment of new education capabilities and education programs in the province.**

Examples of Ontario Initiatives to Strengthen Innovation System Components

- **Public Research Institutes**
  - **Supporting the establishment of Public-Private Research and Education Institutes at a number of universities: UOIT, McMaster, Waterloo, Windsor**

Examples of Ontario Initiatives to Strengthen Innovation System Components

- **Private Company Innovation Projects**
  - **Through Ontario government programs (OAIS and AMIS) have supported a number of innovation projects.**
  - **Look for more under NGOJF and rethink of AMIS**

Examples of Ontario Initiatives to Strengthen Innovation System Components

- **Private company innovation labs**
  - **Through OAIS have supported the establishment of a number of corporate research labs.**

Today and the Future

- Ontario is committed to undertaking continuous examination of its automotive innovation system.
- Ontario is committed to ensuring the research and education components of the system can meet the needs of innovative companies.
- Ontario is committed to working with private companies, universities, and community colleges to strengthen the Automotive Innovation System.
- Ontario is looking to be at the front of the next wave.

Thank You.