

A Review of Canada's Innovation System: Where are we and what do we need to do next?

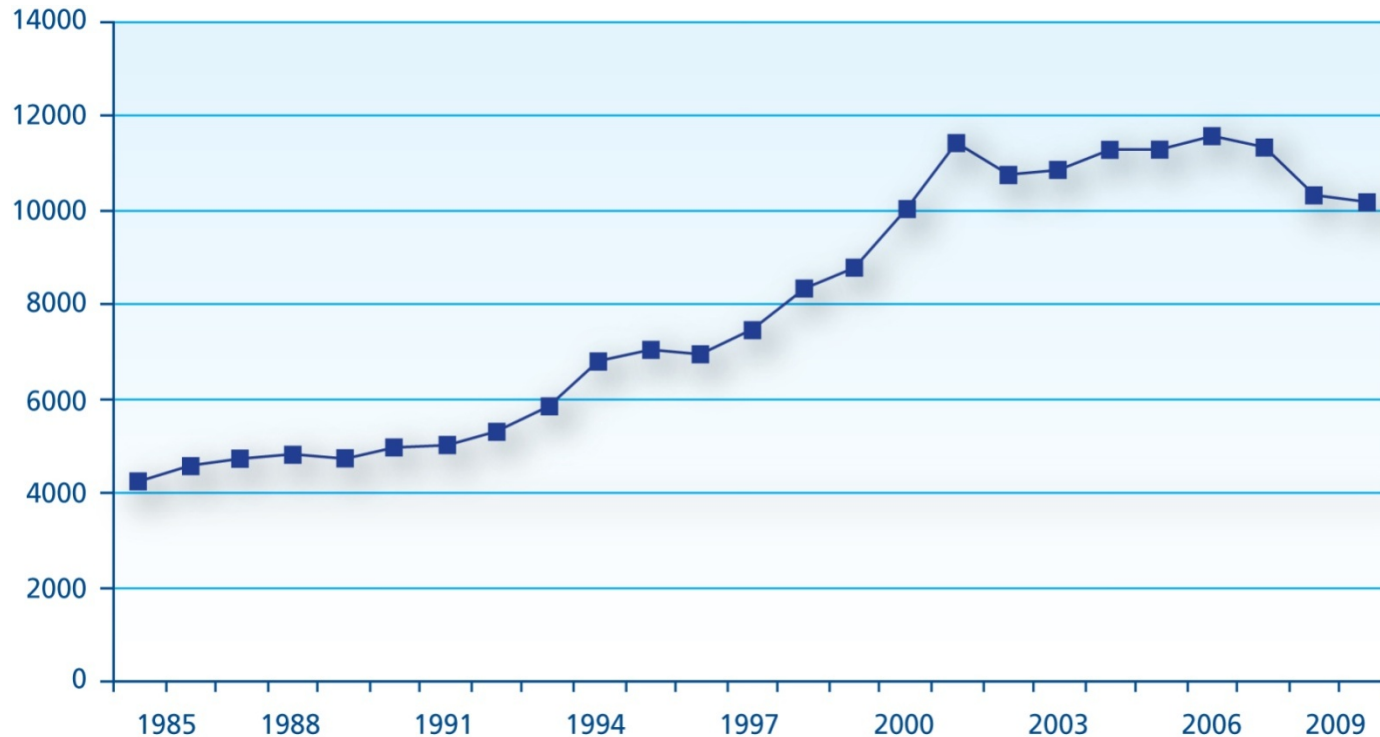
Ottawa
April 6, 2016

Tom Jenkins
Chair, OpenText Corporation
Chair, National Research Council
Chancellor, University of Waterloo

Where are We?



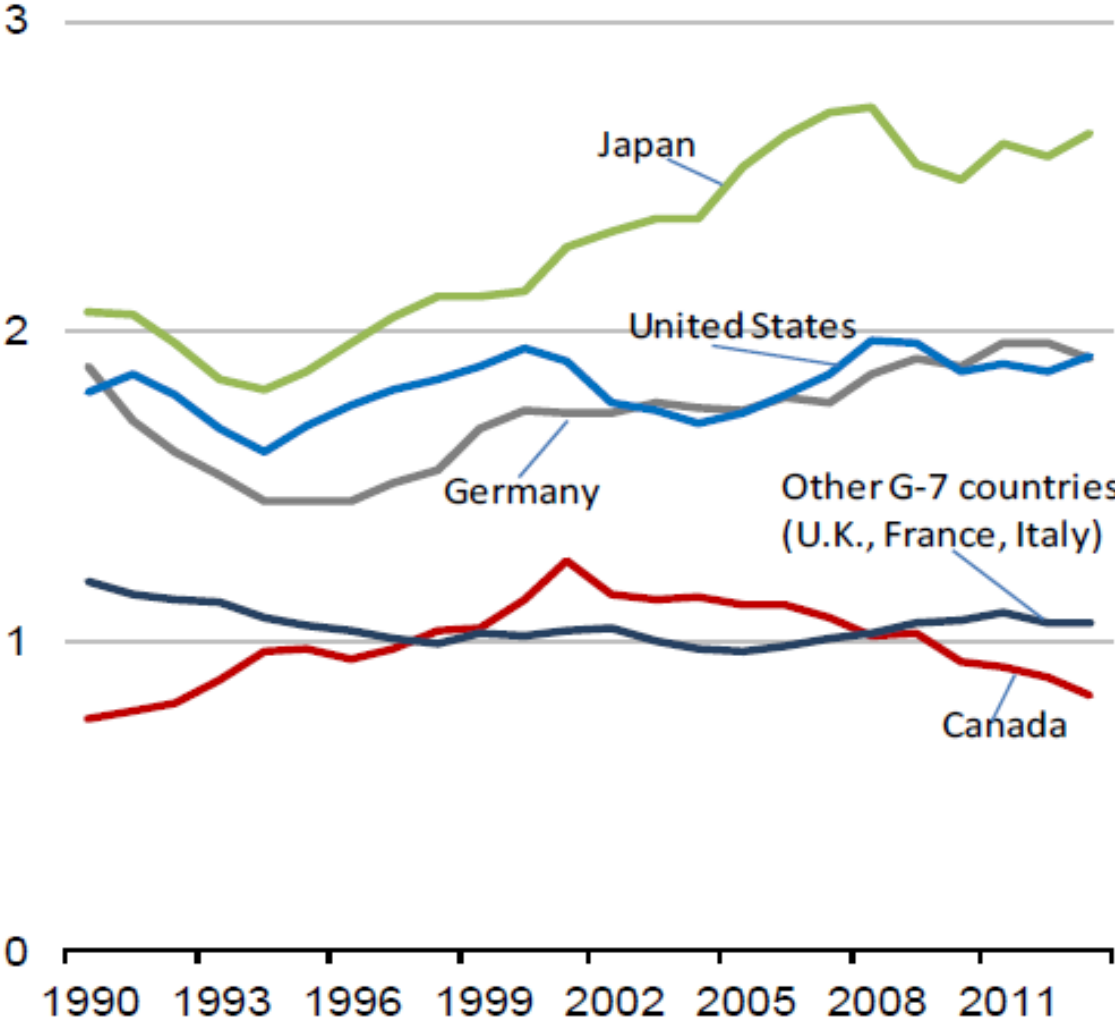
Canadian Business R&D expenditures are stalled



Canadian Business Expenditure on Research and Development (BERD), 1985-2010 (billions of 2000 constant dollars)

BERD Score continues to fall

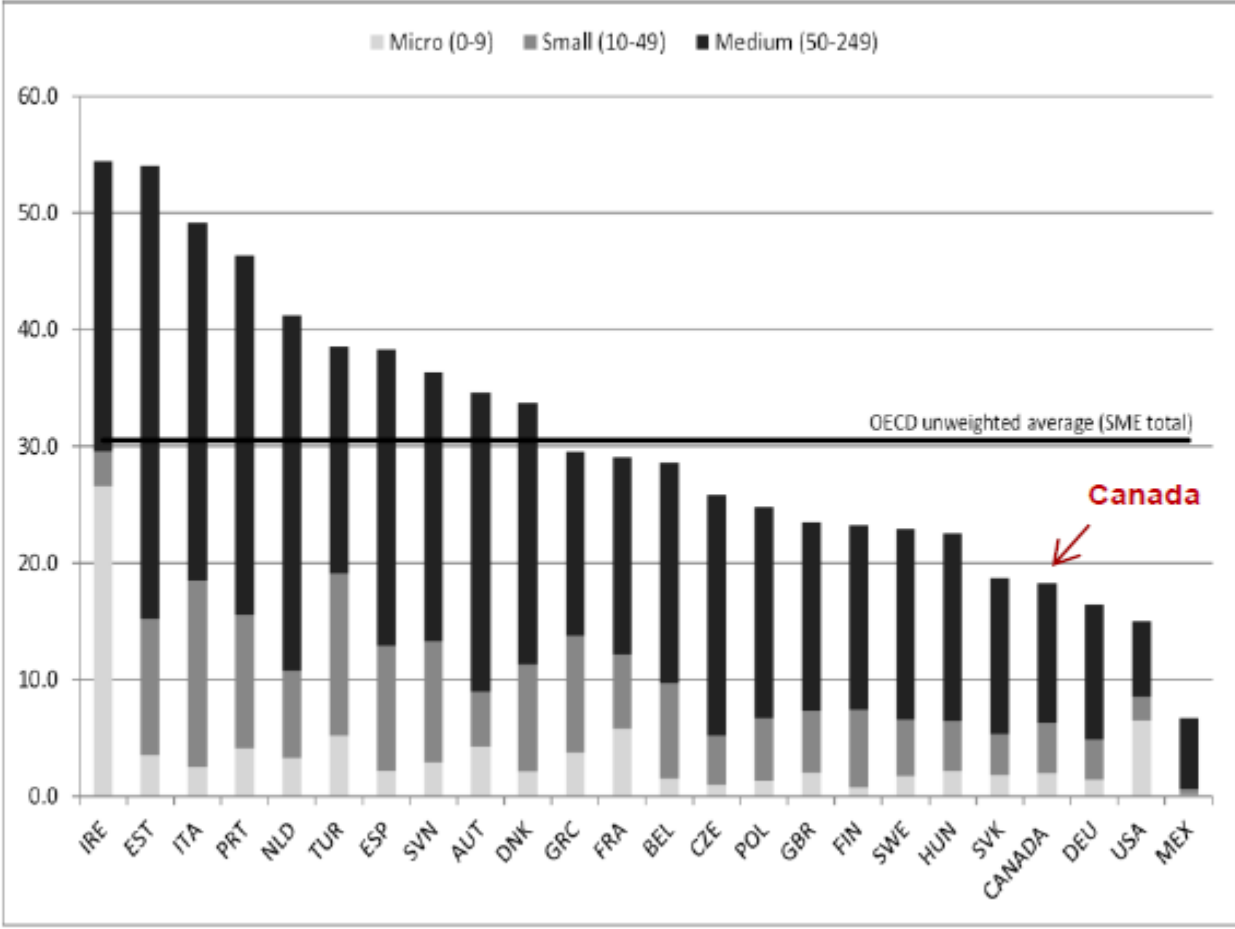
Business Expenditure on R&D as a Share of GDP, 1990-2013



Source:
OECD

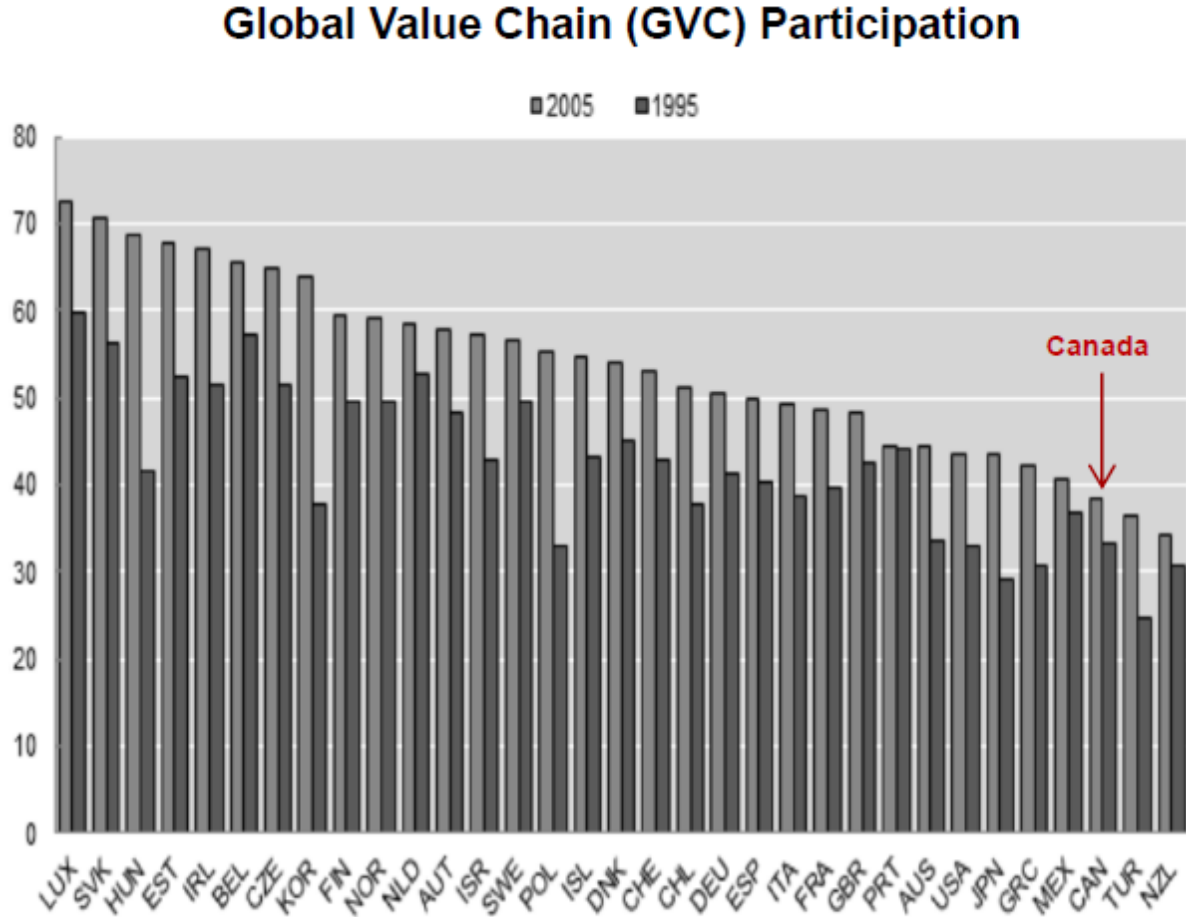
Canadian Industry: Low Exports

Share of Export Value by Enterprise Size, 2012 or Latest Available Year



Source: OECD 2015 Review of SME and Entrepreneurship Issues and Policies in Canada (draft)

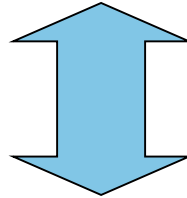
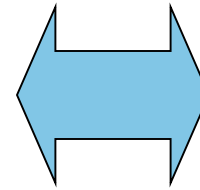
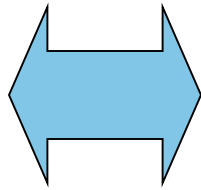
Participation in Global Economy



Source: OECD 2015 The Future of Productivity

Note: GVC participation is defined as the sum of: 1) the share of imported inputs in a country's exports (backward); and 2) its exports used as inputs in other countries' exports (forward).

Players in our Innovation Eco System



Our Policy Challenge: Invention vs. Innovation

This is not an “or” it must be an “and”

Invention



Innovation



Science

Commercialization

My Background on this topic:



Canada's largest software company

Built the Original “Google” in the mid 90s

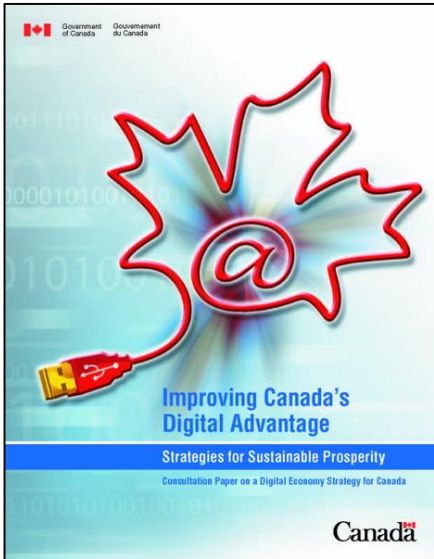
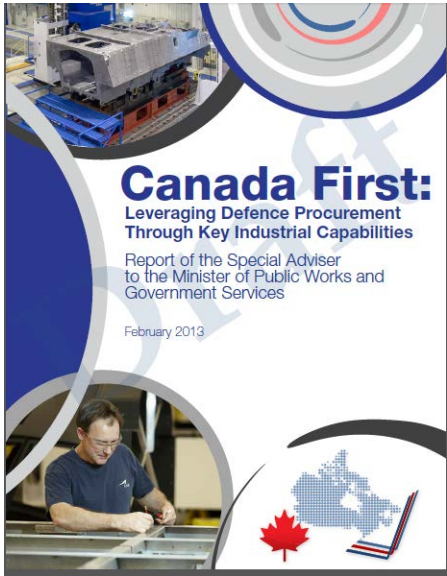
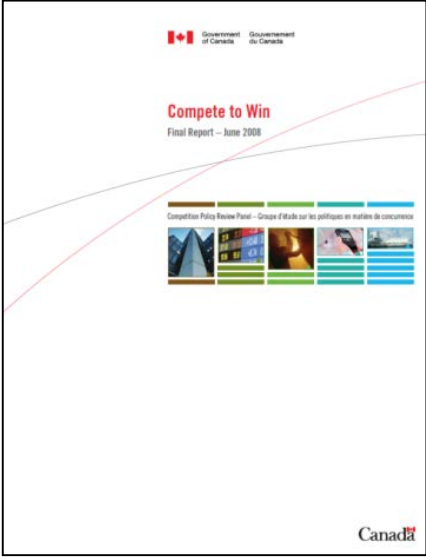
The logo for Yahoo!, featuring the word "YAHOO!" in a bold, red, serif font with a registered trademark symbol.

*based on
university
research*



Jerry Yang CEO of Yahoo and Tom Jenkins CEO of Open Text launch in 1995.

Various Policy and Research Reports



Innovation: What Needs To Change?



Go Global

Be A Customer



*Go with the Flow:
Commercialization*

Enlightened
Self Interest
is needed!



Be A Customer

A Foundation Principle of the Reports

Competition



Innovation



Productivity

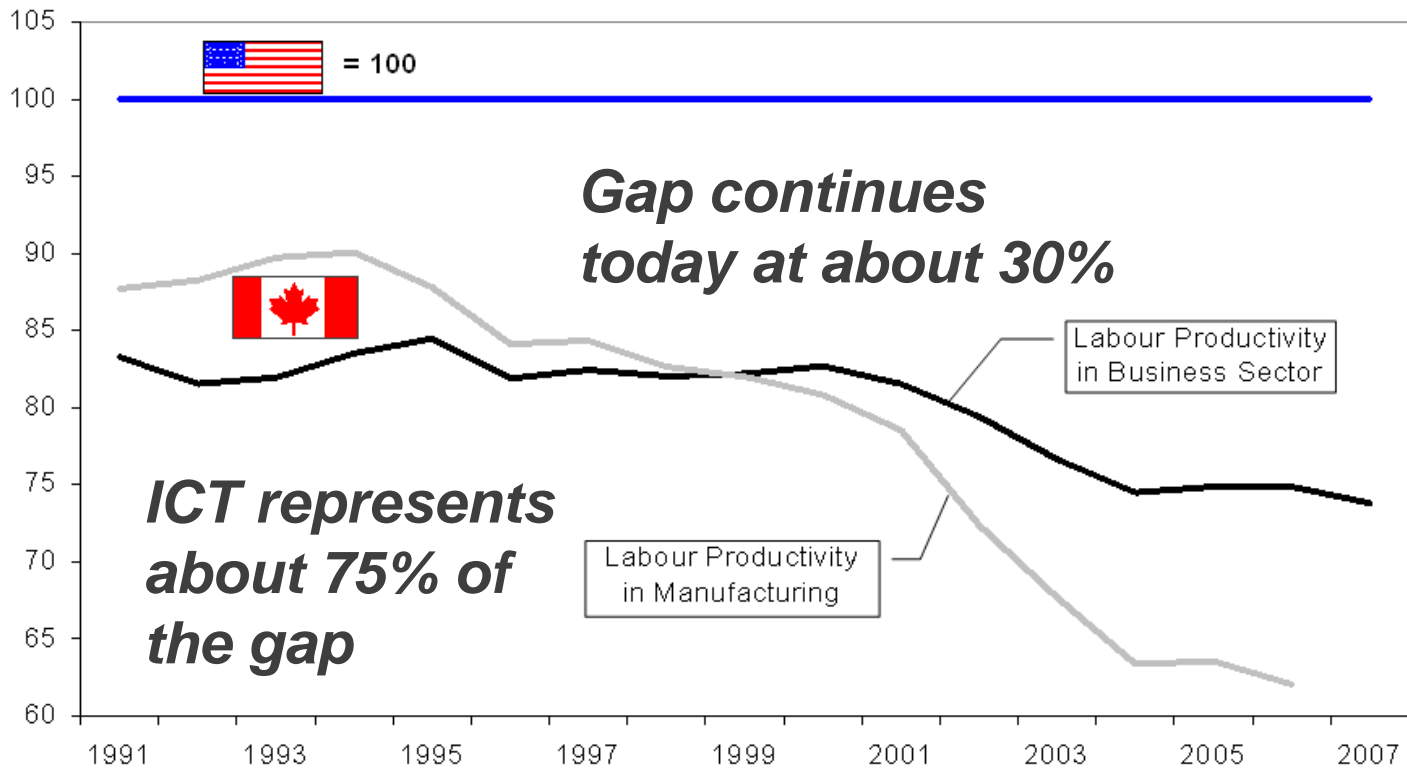


Competition: The Elephant in the Room



Poor Relative Productivity Performance

Our Findings: Relative Labour Productivity Gap in Canada
1991–2007



ICT represents about 75% of the gap

Gap continues today at about 30%

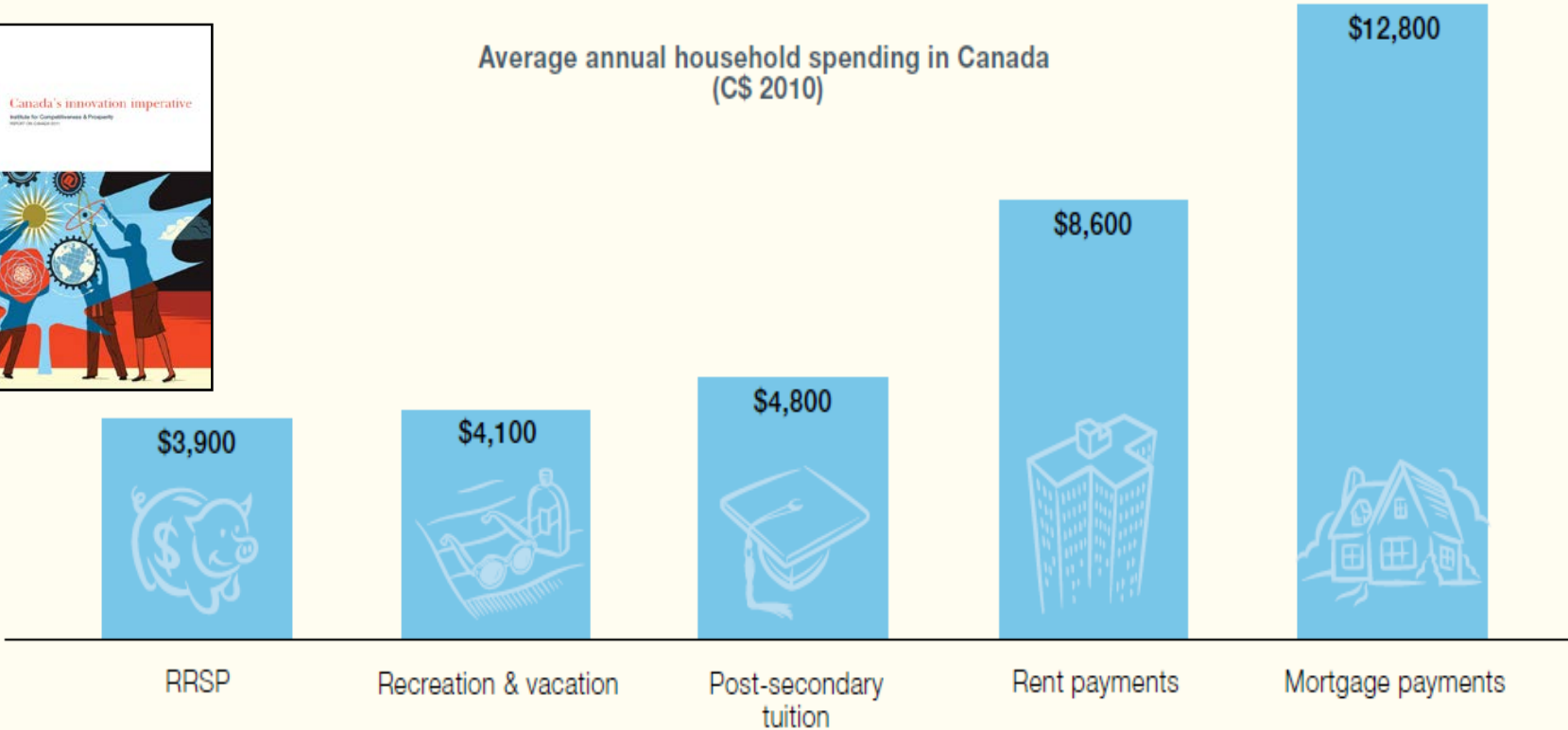
Impact on Standard of Living

Exhibit 5 Canadian families would have higher living standards if the prosperity gap were closed

Benefits of closing the prosperity gap for the average household
\$12,900 increase in personal disposable income



Average annual household spending in Canada
 (C\$ 2010)



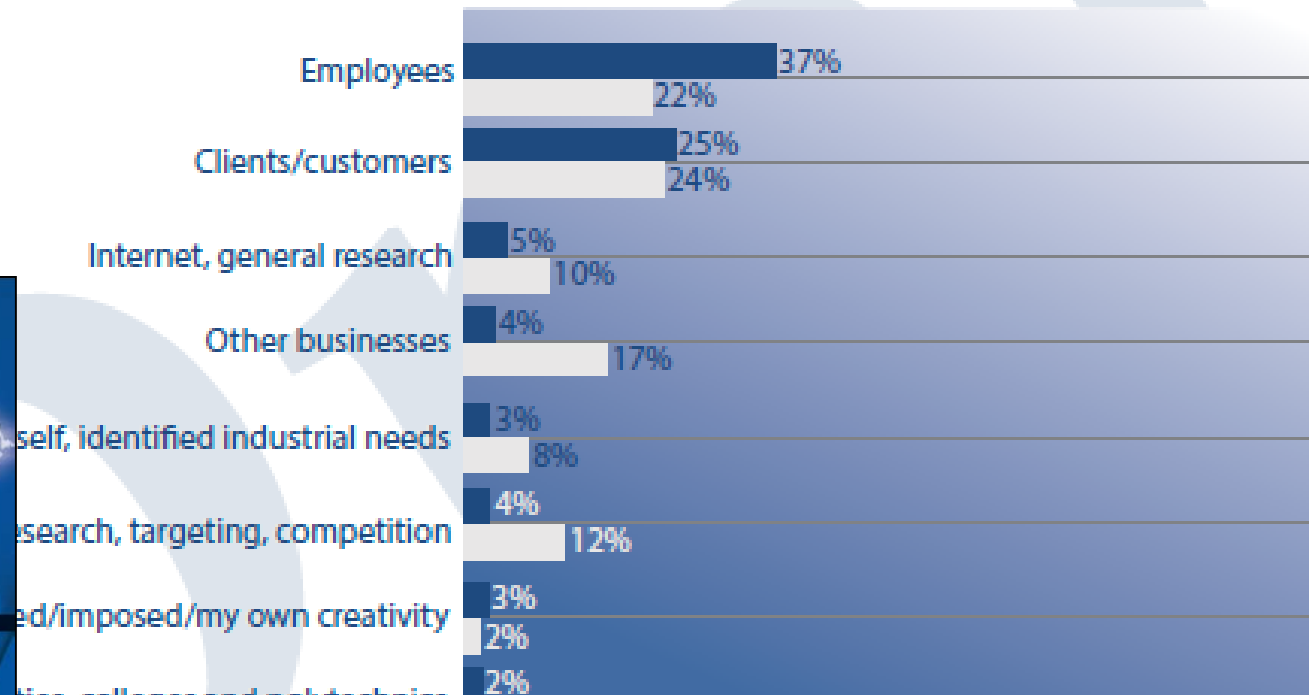
Note: Among Canadians with some spending in these categories; 2009 results restated to 2010 dollars.
 Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, *Spending Patterns in Canada 2009*.

Sources of Innovation

Most Important Sources of Firms' Innovation Ideas

"What are the most important sources for your firm's innovation ideas?"

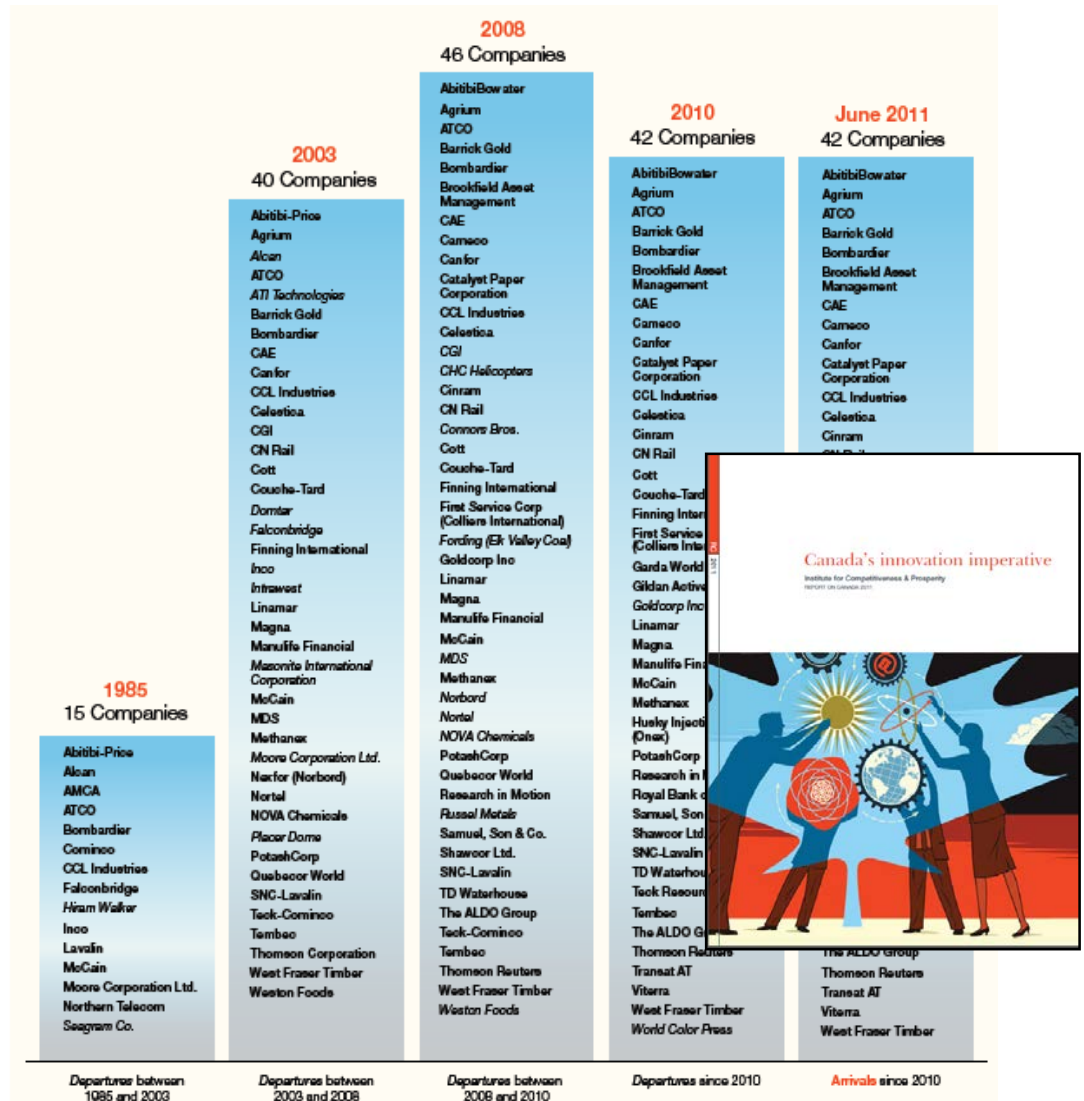
[Open ended – Multiple responses accepted]



- Customers & Employees (speaking with Customers) dominate (62% of all responses)

Canadian Based Global Leaders

- From 1985 to 2011, Canada has gone from 15 to 42 corporations which are considered global leaders.
- Less than 10% of these global leaders are from sectors with protection regimes.



Note: Companies with sales revenue above \$1 billion and are in the top five in their market. Source: Institute for Competitiveness & Prosperity analysis.

Sectoral Regimes: The Wilson Report

- Transport
- Uranium
- Telecommunications
- Broadcast
- Financial Services
- Culture



The World has Changed Dramatically

- Internet
- Mobile
- Global Value Chains



Canadian Firms Enjoy Higher Profits

some may have flexibility to set prices to meet profit goals

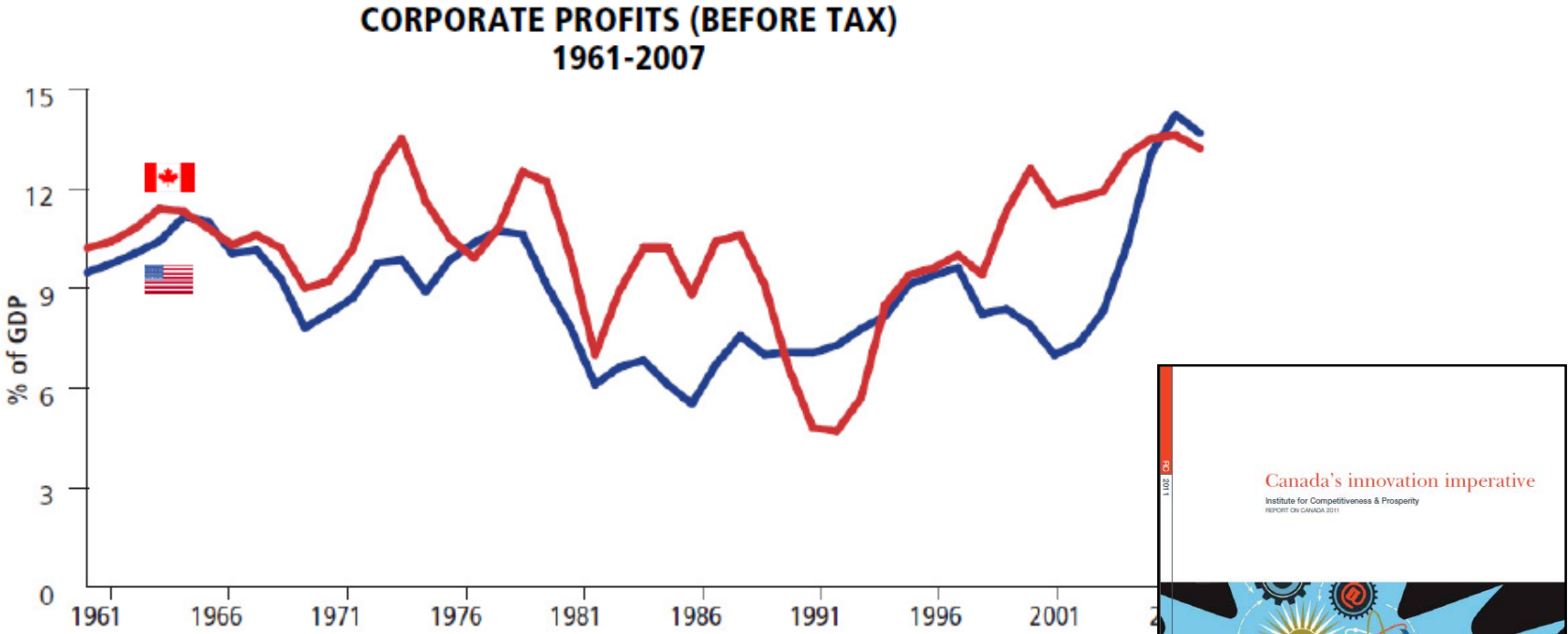
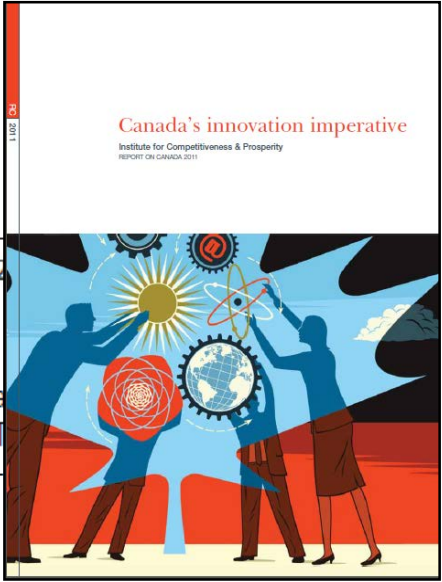
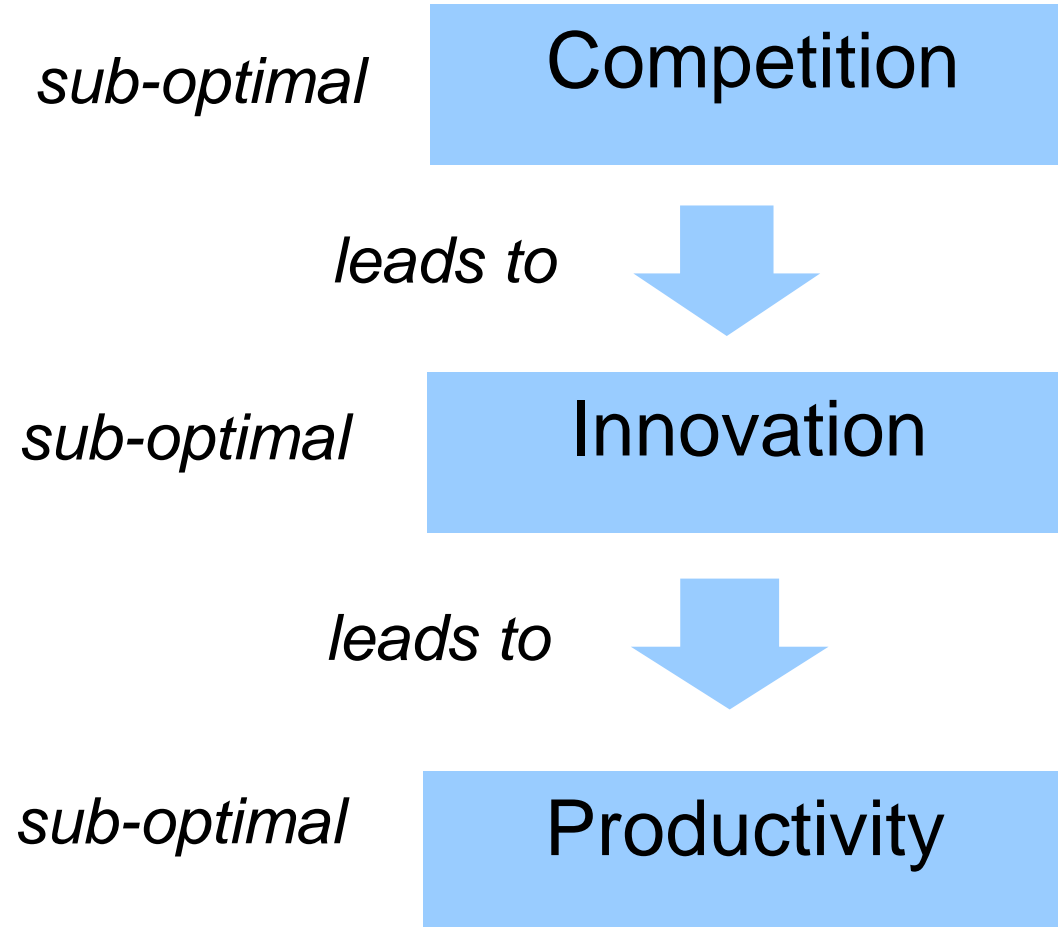


Figure 9: Corporate Profits — Canada-U.S. Comparison

Aggregate corporate profit (before tax) as a percentage of GDP has generally been higher in Canada than in the U.S., with the Canadian ratio higher in 39 of the 47 years (83%) from 1961 to 2007. The only time when the profit ratio in Canada was significantly below that of the U.S. was in the 1990-period reflecting the deeper recession in Canada.



Logical Flow:



A Balanced Model for Innovation

Exhibit 23 Support and pressure drive innovation

Support

- Government funding for R&D
- University education of masters and PhD students
- Skilled investors
- Capable managers
- Larger markets and better supply chains through international trade

Innovation

Pressure

- Sophisticated consumers
- Aggressive competitors
- Investor demand for profitable growth
- Challenging international consumers
- More intense global competition

Business & Prosperity.

Canada's innovation imperative
Institute for Competitiveness & Prosperity
REPORT (MAY/JUNE 2011)



R&D Report

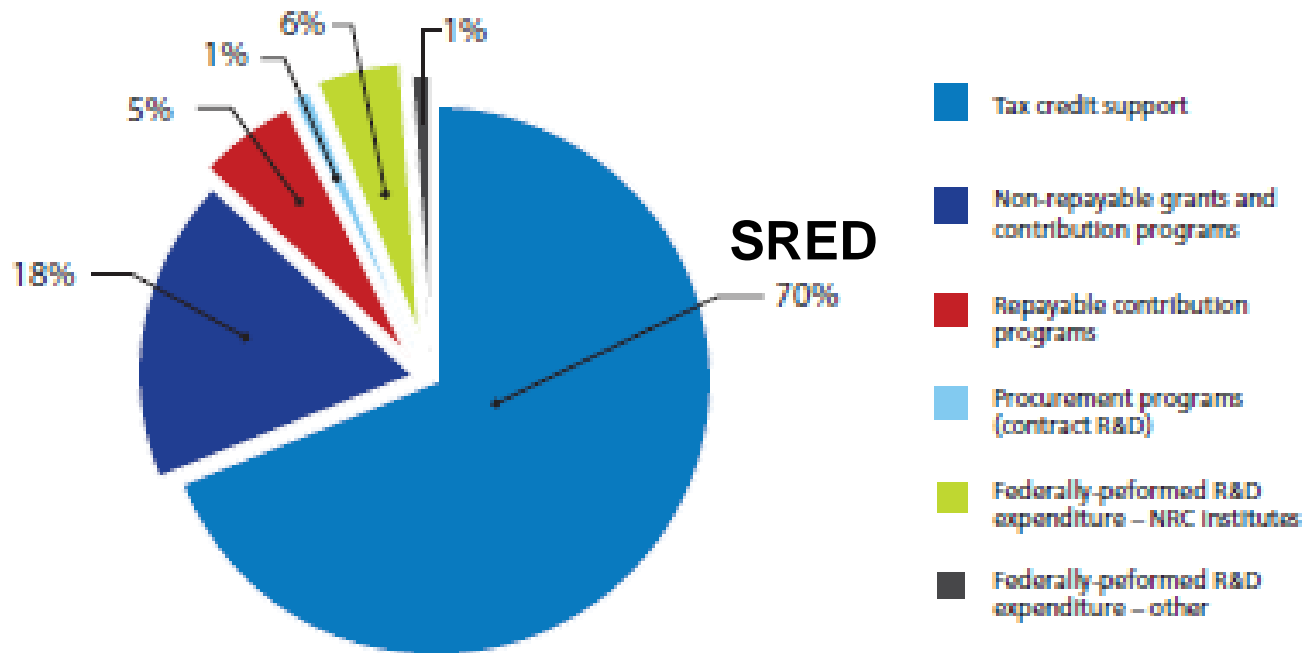
Support

- Government funding for R&D
- University education of masters and PhD students
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Overwhelmingly through indirect support (SR&ED)



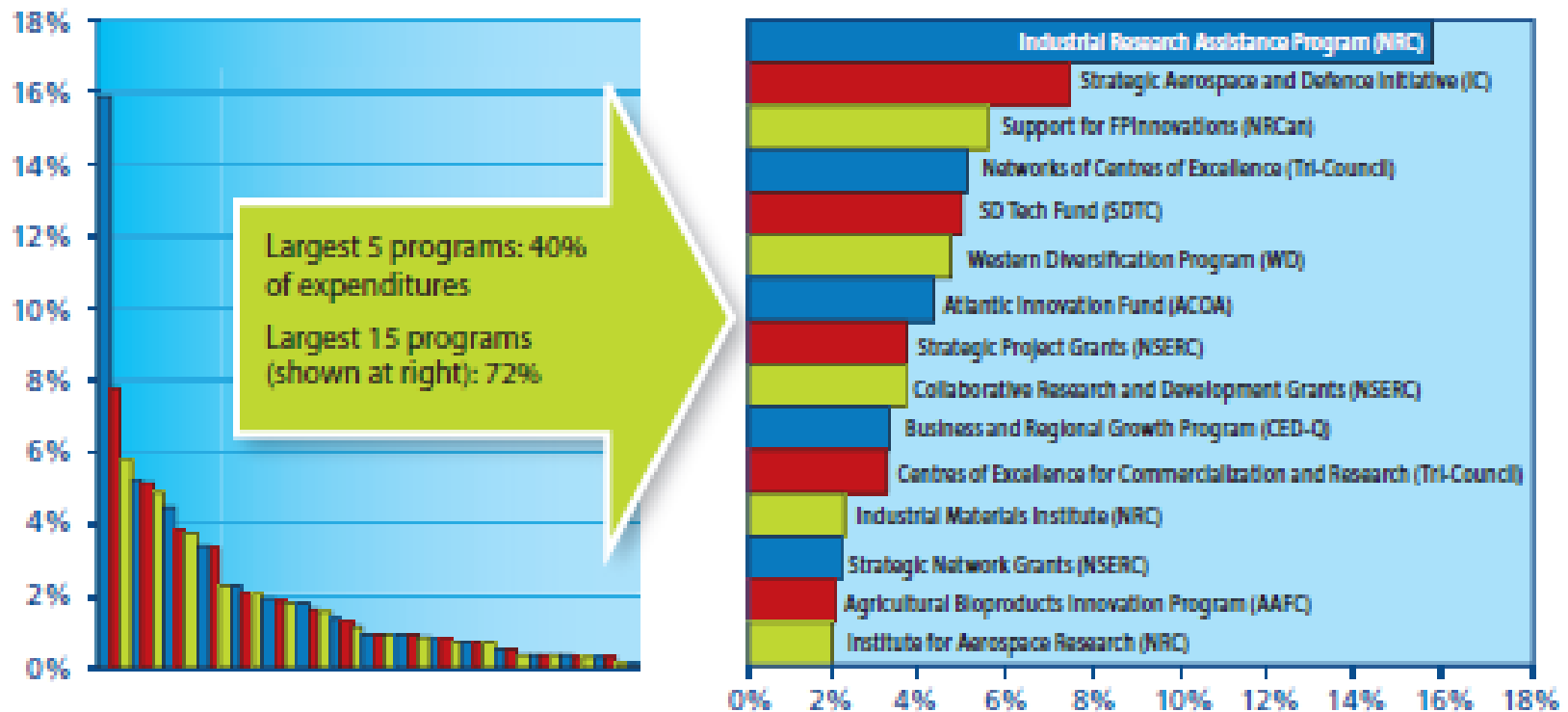
^a Amounts do not add up due to rounding. The value of tax credit support is a projection for the 2010 taxation year.

Source: Based on figures provided by departments and agencies.

Review of Federal Support to Research and Development Examen du soutien fédéral de la recherche-développement



With complex array of small direct support programs

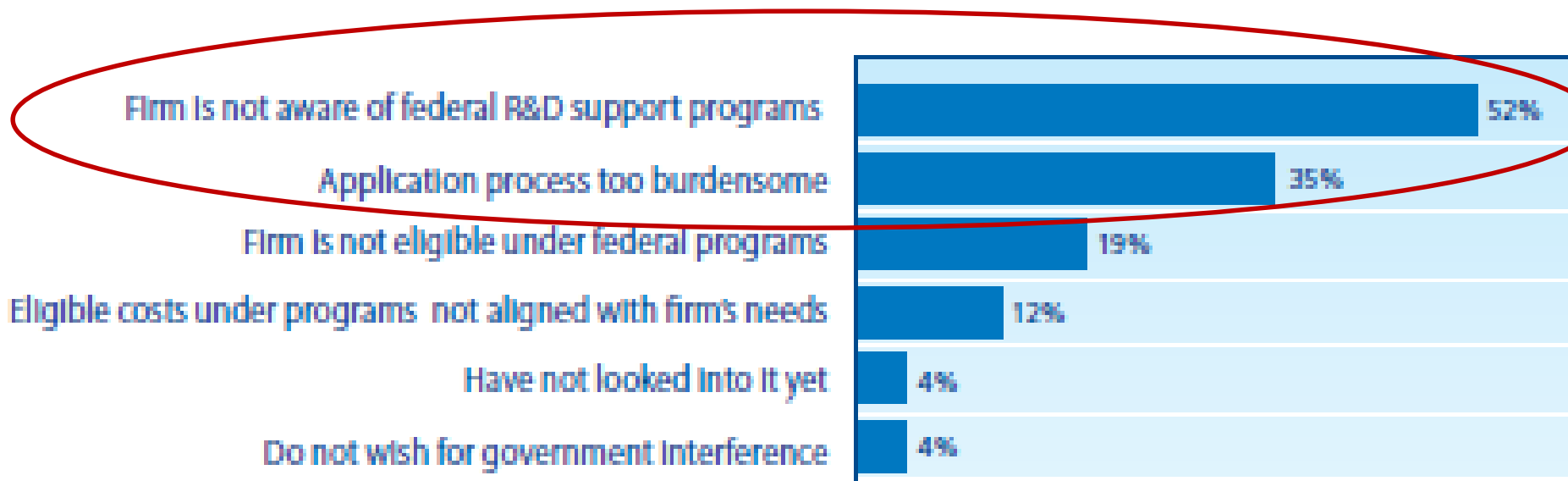


Source: Based on figures provided by departments and agencies.



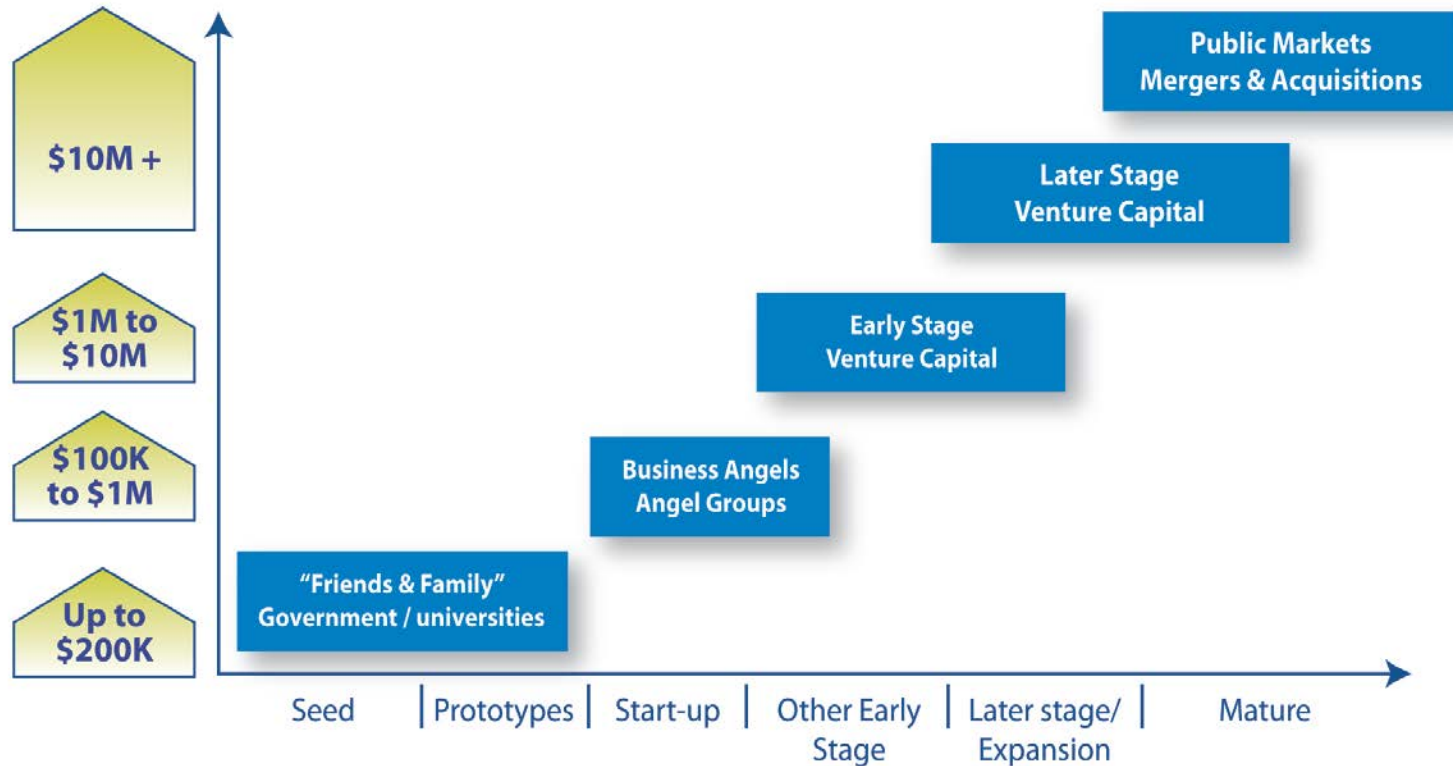
Firms have trouble finding / using these

“Are any of the reasons listed below among the reasons your firm has never used or participated in federal programs that support business or commercially oriented R&D?” [Addressed to R&D-performing firms reporting that they never accessed a federal program]





“Gaps” in Angel and Late-Stage Capital



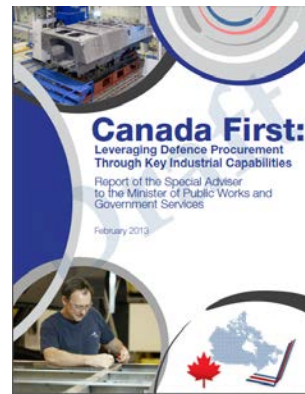


Recommendations of the 2011 Report

1. Create an Industrial Research and Innovation Council (IRIC)
2. Simplify the SR&ED program
3. Make business innovation a core objective of procurement
4. Transform the institutes of the National Research Council
5. Strengthen Risk Capital
6. Establish a clear federal voice for innovation

Federal Budgets (2012 through 2016)

- Simplify SRED & Switch to Direct programs
- \$500 million leveraging Risk Capital
- \$200+ million NRC/IRAP
- National Procurement Strategy
- \$800 million for Innovation Clusters



VCAP

What do we need to do next?

Innovation Policy Challenge: *Getting the Balance Right*

Economic Reality

Society Aspirations



Global Competition

National Control



Innovation Policy Challenge: *Science vs. Commercialization – we need both!*

Invention



Innovation



Science

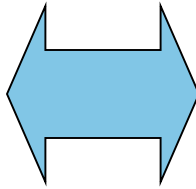
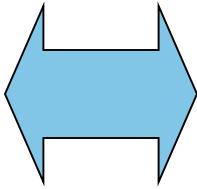
Commercialization

Better Co-Ordination Within & Between

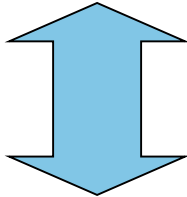
Be A Co-Ordinated Customer



Go Global



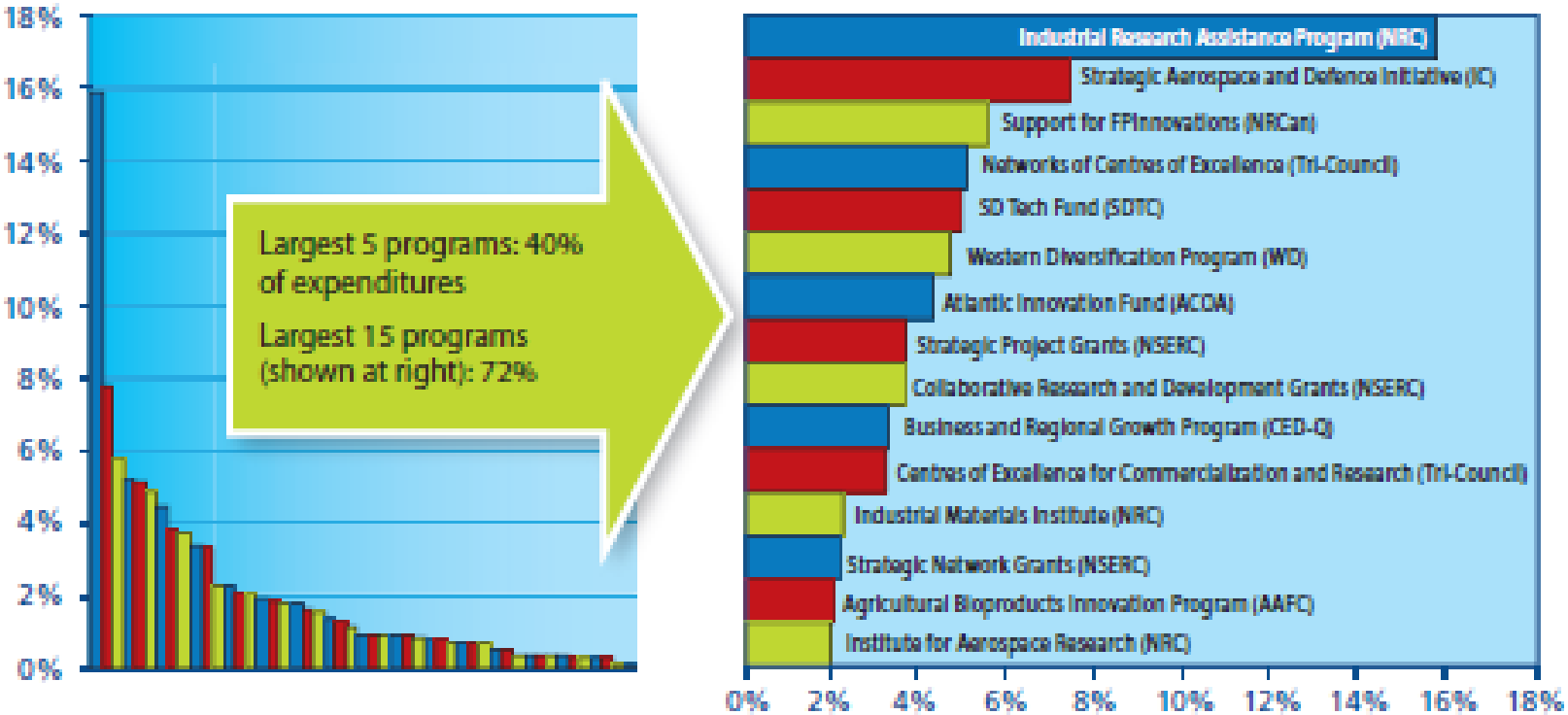
*Go with the Flow:
Commercialization*



Be A Co-Ordinated Customer

Complex array of small direct support programs

Consolidate & streamline and achieve greater scale and effectiveness



Source: Based on figures provided by departments and agencies.

Example of Consolidated Government Support for Industry Research: Fraunhofer Institute System

The 67 Institutes are organized into Innovation Clusters

Box 7.3 Germany's Fraunhofer-Gesellschaft^a

The Fraunhofer-Gesellschaft (F-G) organization operates 60 Fraunhofer institutes in Germany. These customer-oriented, applied research institutes strive to transform scientific findings into useful innovations. The institutes' focus on application-oriented research is situated within the broader spectrum of the German research system — a spectrum that includes, at one end, the publicly funded, basic research-oriented Max Planck Society and, at the other end, privately funded industrial research.

The F-G's threefold mission is (i) to promote and undertake research in an international context of direct utility to private and public enterprise and of wide benefit to society as a whole, (ii) to reinforce the competitive strength of the economy by developing technological innovations and novel systems solutions for their customers and (iii) to provide a platform that enables staff to develop the necessary professional and personal skills to assume positions of responsibility within their institute, in industry and in other scientific domains. As institutes are encouraged to work with industry, only about a third of base funding comes from government. Institutes must secure the remaining revenue from other sources, which typically comes in roughly equal proportions from industry and public contracts and project funding.

The Fraunhofer institutes provide highly specialized expertise that may be too expensive for any mid-sized company to build up and may also be beyond the scope of consulting companies. By connecting with universities and technical institutes/universities of applied science, and by applying for competitive research grants, the F-G institutes retain an edge in science and technology. Indeed, the grants are used for advanced work that is well ahead of the marketplace but has been identified as potentially important to client companies in the years to come.

In summary, the Fraunhofer institutes are characterized by (i) professional R&D services to industry, (ii) demand-driven research combined with scientific excellence, (iii) strong integration with academia and (iv) autonomy combined with simple corporate rules and a strong brand.

^a Information drawn from the Fraunhofer website at: www.fraunhofer.de; and Panel consultations.

Example of Consolidated Government Support for Science: Max Planck Institute System

The screenshot displays the Max Planck Society website. At the top, a navigation bar includes links for INSTITUTES, RESEARCH, CAREER, INTERNATIONAL, VIEWPOINTS, and KNOWLEDGE TRANSFER, along with a search box. Below the navigation, a breadcrumb trail shows 'Max Planck Institutes'. The main content area is titled 'MAX PLANCK INSTITUTES' and features two large images of research buildings. The first image is of the 'Associated Institute - Research Center caesar (center of advanced european studies and research) in Bonn'. The second image is of the 'Max Planck Institute of Molecular Cell Biology and Genetics in Dresden'. To the right of these images is a sidebar with several sections: 'Print Page' and 'Recommend Page' buttons; 'INSTITUTES IN THE GERMAN FEDERAL STATES' with a map of Germany; 'Search by region' with a description of regional distribution; 'MAX PLANCK DIRECTORS' with a section for 'Scientific Members'; and 'MAX PLANCK FELLOWS' with a section for 'Max Planck Fellows'. At the bottom of the main content area, there is a vertical list of categories: 'All Institutes', 'Biology & Medicine', 'Chemistry, Physics & Technology', and 'Humanities & Social Sciences'.

INSTITUTES | RESEARCH | CAREER | INTERNATIONAL | VIEWPOINTS | KNOWLEDGE TRANSFER

Max Planck Institutes

MAX PLANCK INSTITUTES

Associated Institute - Research Center caesar (center of advanced european studies and research) in Bonn

Max Planck Institute of Molecular Cell Biology and Genetics in Dresden

Print Page
Recommend Page

INSTITUTES IN THE GERMAN FEDERAL STATES

Search by region
Regional distribution of the Max Planck institutes and research institutions

MAX PLANCK DIRECTORS

Scientific Members
The Scientific Members of the Max Planck Society head the institutes. Thirty percent of them come from abroad. [more]

MAX PLANCK FELLOWS

Max Planck Fellows
The new Max Planck Fellows program aims to strengthen cooperation between Max Planck institutes and universities.

All Institutes
Biology & Medicine
Chemistry, Physics & Technology
Humanities & Social Sciences

Example of Consolidated Government Support for NGOs: Leibniz Association

START CONTACT IMPRINT DATENSCHUTZ SITEMAP RSS DEUTSCH



ABOUT US INSTITUTES & MUSEUMS RESEARCH INFRASTRUCTURES TRANSFER CAREERS MEDIA

Netherlandish drawings
Germanisches Nationalmuseum

The prominent role of graphic art is reflected in the GNM's holdings of Netherlandish drawings of the 15th to 18th century, which are now being shown for the first time in a special exhibition.

© GNM

The banner features a detailed illustration of a religious scene, likely a Madonna and Child with several figures, rendered in a fine-line drawing style characteristic of the Northern Renaissance. A semi-transparent text box is overlaid on the left side of the image.

NEWS

Print icon, Facebook icon, search word input field, play button icon, Twitter icon, YouTube icon

Link between gene expression and

Sex with the other species

Better Co-Ordination Between:

BHER Business Higher Education Roundtable

Co-Chairs:

Tom Jenkins

Elizabeth Cannon

Ann Sado



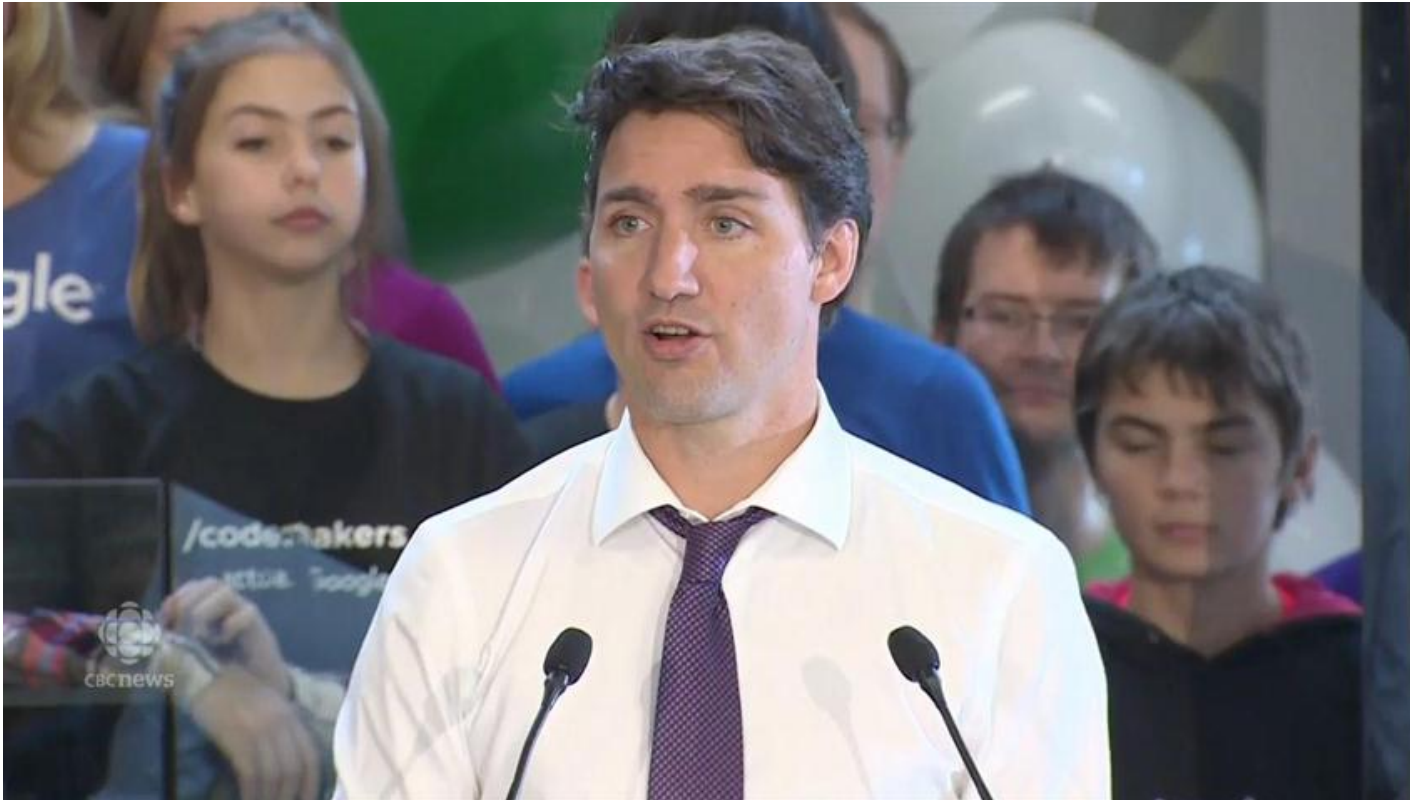
- 1.5 million employees
- 800,000 students
- \$1.1 Trillion in Revenue
- \$8.5 Billion in Research

National Recognition of Innovation

PM Justin Trudeau calls Waterloo Region 'extraordinary hub' for innovation

Prime minister says region hosts 'innovation at the cutting edge of the global economy'

[CBC News](#) Posted: Jan 14, 2016 10:26 AM ET Last Updated: Jan 14, 2016 2:32 PM ET



Federal Innovation Mandate

For the first time in Canadian history, a federal department and minister is designated for Innovation. Part of the Mandate for the Minister is:

“Develop an innovation agenda that includes: expanding effective support for incubators, accelerators, the emerging national network for business innovation and cluster support... These investments will target key growth sectors where Canada has the ability to attract investment or grow export-oriented companies.”*

**Excerpt from mandate letter from PM Trudeau to Innovation, Science, Economic Development (ISED) Minister Bains*

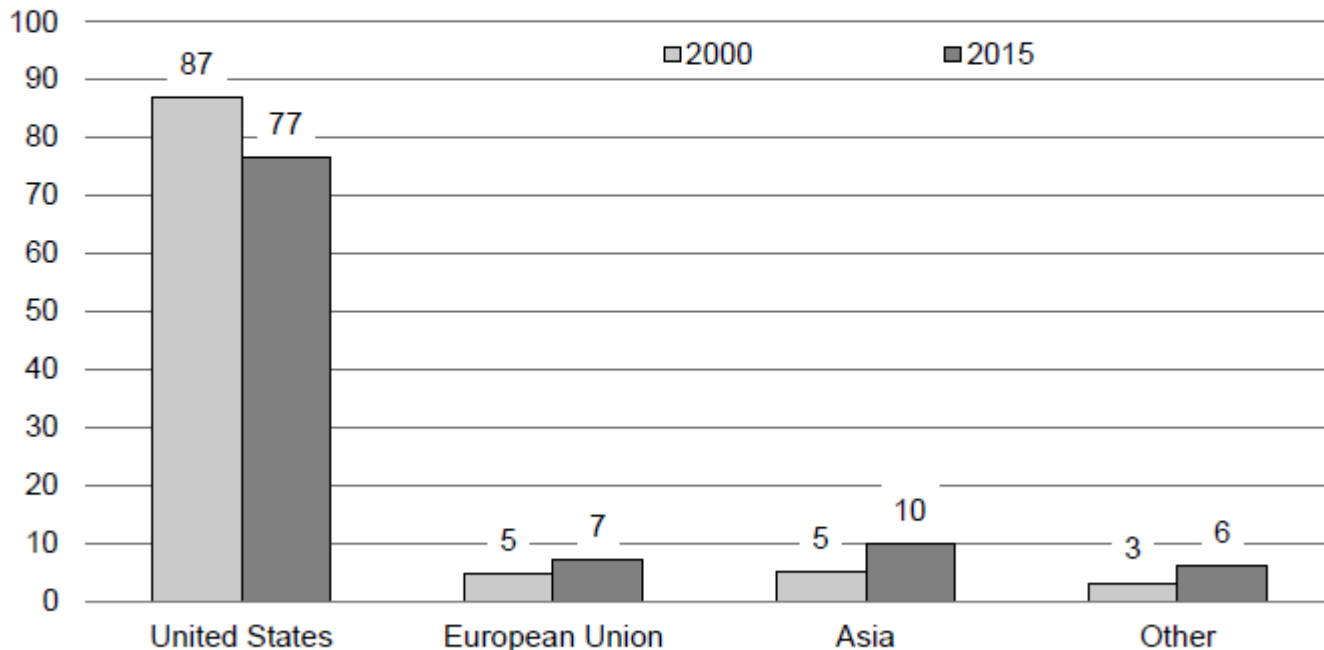
Federal Budget Recognition of Exports

The Government is acting to support Canada's exporters in a shifting global economy

Chart 23

SHARE OF CANADIAN GOODS EXPORT BY REGION OF DESTINATION

per cent



Note: Asia excludes the Middle East. Totals may not add due to rounding.

Source: Innovation, Science and Economic Development Canada.

2016 Budget on Innovation Clusters

Translating Canada's science and technology strengths into successful, globally competitive companies requires the private sector, post-secondary institutions, governments and other stakeholders to work together more strategically to achieve greater impact. Connections between knowledge producers and users—including researchers and firms—and collaboration within supply chains driven by market opportunities create value through innovation and support economic growth. Information gaps and coordination challenges may prevent these linkages from being developed to their full potential, impacting the strength of innovation ecosystems. To help address these challenges, **Budget 2016 proposes to make available up to \$800 million over four years, starting in 2017–18**, to support innovation networks and clusters as part of the Government's upcoming Innovation Agenda.

**Excerpt from Federal Budget, 22 March 2016*

Federal Budget on Science

\$2 Billion over
3 years for
Science and
PSE

STRENGTHENING SCIENCE AND RESEARCH

The Government understands the central role of science in a thriving, clean economy and in providing evidence for sound policy decisions. Canada's universities, colleges and other research institutions play a fundamental role in Canadian society by developing highly skilled and creative workers. They are also the engines of discovery, and collaborate on innovations that help companies compete and grow. Budget 2016 takes action to reinvigorate Canada's research and science base by investing in infrastructure at post-secondary institutions and federal laboratories, fostering research excellence, and accelerating the diffusion and commercialization of knowledge into applications that benefit industry and society as a whole.

STRATEGIC INFRASTRUCTURE INVESTMENTS AT POST-SECONDARY INSTITUTIONS

The prosperity of Canadians relies on the ability of the country to attract and retain talented people, boost innovation and build a sustainable economy. The quality of infrastructure at Canadian post-secondary institutions plays a key role in these efforts. Through the Canada Foundation for Innovation, the Government of Canada already makes significant investments in research infrastructure at Canada's universities, colleges and research hospitals. Provinces and territories also provide substantial funding for campus renewal every year. Nonetheless, much of Canada's post-secondary infrastructure is over 25 years old and nearing the end of its useful life. This presents an opportunity to invest in greener and more innovation-friendly spaces.

Changing the Culture on Innovation



Governor General's Innovation Awards

Long term multi-dimensional effort to encourage innovation in Canada



First Annual Awards Ceremony – May 19, 2016 – Rideau Hall

A National Partnership

Founding Partners



The Office of the Secretary to the Governor General oversees all aspects of the awards.



The Canada Foundation for Innovation manages the selection process, drawing on the knowledge and expertise of highly accomplished individuals from all sectors of society.



The Canadian Science and Technology Museums Corporation supports the initiative through public education and outreach by showcasing and promoting Canada's outstanding innovation success stories.



RIDEAU HALL FOUNDATION | FONDATION RIDEAU HALL

The Rideau Hall Foundation gathers and aligns contributions from philanthropic and corporate sectors.

An Innovative Approach to Awards



Governor General's Innovation Awards

List of Nominating Partners

[Association francophone pour le savoir](#)

[Business Development Bank of Canada](#)

[Canada Council for the Arts](#)

[Canada Gairdner Awards](#)

[Canada's Public Policy Forum](#)

[Canadian Council for Aboriginal Business](#)

[Canadian Council of Chief Executives](#)

[Canadian Institutes of Health Research](#)

[Centre for Social Innovation](#)

[Chantier de l'économie Sociale](#)

[Colleges and Institutes Canada](#)

[Communtech](#)

[Community Foundations of Canada](#)

[Entertainment Software Association of Canada](#)

[Ernest C. Manning Awards Foundation](#)

[Ernst & Young Entrepreneur of The Year](#)

[Excellence Canada](#)

[Federation of Canadian Municipalities](#)

[Imagine Canada](#)

[Institut du Nouveau Monde](#)

[Information Technology Association of Canada](#)

[MaRS Discovery District](#)

[Mitacs](#)

[National Research Council of Canada](#)

[Natural Sciences and Engineering Research Council of Canada](#)

[Perimeter Institute for Theoretical Physics](#)

[Pierre Elliott Trudeau Foundation](#)

[Social Sciences and Humanities Research Council](#)

[Startup Canada](#)

[Sustainable Development Technology Canada](#)

[The Institute of Public Administration of Canada](#)

[The J.W. McConnell Family Foundation](#)

[TRICO evolution](#)

[Universities Canada](#)

Book on history of Canadian Innovation

Ingenious.

Stories of Canadian Innovation
helping the world be smaller,
smarter, kinder, safer, healthier,
wealthier, and happier



Release date: March 2017

Book on history of Canadian Innovation

National
Promotion
Campaign

Ingenious.

Stories of Canadian Innovation
helping the world be smaller,
smarter, kinder, safer, healthier,
wealthier, and happier

300+
innovation
stories

10
educational
Lessons



1,000+ stories in
the online National
Innovation
Database

Release date: March 2017

Closing Thought

- Our competitiveness as a country and as a society will depend on our ability to make strategic policy decisions.
 1. To be competitive and maintain our particular concept of society we must strike a balance between the open market and sector regimes. Industry must step up.
 2. We have to drive innovation by Government taking more risk and being a demanding customer in procurement.
 3. Academia needs to drive science excellence while also helping commercialization programs to take hold.
- We cannot expect to have it both ways. We must have a comprehensive debate in Canada about this.



Thank You

Ottawa
April 6, 2016

Tom Jenkins
Chair, OpenText Corporation
Chair, National Research Council
Chancellor, University of Waterloo