



# Survey of Advanced Technology - 2007

Confidential when completed

Si vous préférez ce questionnaire en français, veuillez nous appeler au 1-866-297-3138

**Correct as required**

Company name

Establishment name

C/O

Address

City

Province/Territory  Postal code

## INTRODUCTION

### Survey Purpose

The information you provide is essential to assure the availability of pertinent information on the technological capabilities of business units in the manufacturing and logging industries. The information compiled from the survey can be used by businesses for market analysis, by trade associations to study performance and other characteristics of their industries and by government to develop national and regional economic policies and technology strategies.

### Note of Appreciation

Canada owes the success of its statistical system to a long-standing co-operation involving Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without your continued co-operation and goodwill.

### Confidentiality

Statistics Canada is prohibited by law from publishing any statistics which would divulge information obtained from this survey that relates to any identifiable business or individual without the previous consent of that business or individual. The data reported in this questionnaire will be treated in strict confidence, used for statistical purposes and published in aggregate form only. The confidentiality provisions of the *Statistics Act* are not affected by either the *Access to Information Act* or any other legislation.

### Authority

This survey is conducted under the authority of the *Statistics Act, Revised Statutes of Canada, 1985, Chapter S-19*. Completion of this questionnaire is a legal requirement under the *Statistics Act*. Your participation is appreciated.

### Record Linkage

In order to enhance the information you provide in this survey, Statistics Canada plans to combine the responses relating to your organization with the information previously provided on the Annual Survey of Manufactures. The combined information will be kept strictly confidential and used only for statistical purposes.

### Federal-Provincial Agreement

In order to reduce respondent burden, to reduce the cost of collection and ensure uniform statistics, Statistics Canada has entered into an agreement with the Institut de la statistique du Québec, under Section 11 of the *Statistics Act*, where data on business units located or operating in Québec will be transmitted to the Institut de la statistique du Québec. The Institut de la statistique du Québec has the same provision for confidentiality and penalties for disclosure of information as the federal *Statistics Act* and has the legislative authority to collect this information on its own.

### Survey Contact

Please indicate the name of the person completing this form so we know who to contact should we have questions about this report.

Name: 00001

Title: 00002

Telephone number: 00003 (  )  -

E-mail: 00004

## Key Definition

In this questionnaire, we refer both to your **“business unit”** and to your **“firm”**. By **“business unit”**, we refer to your establishment or local operations (as described on the label on the first page of the questionnaire). By **“firm”**, we refer to all business units and operations in Canada or in other countries that comprise your company.

## Section A - Advanced Technologies

### Advanced Technology Adoption

This question explores advanced technology adoption. It will provide important information on technological capabilities.

- Please take your time to indicate (✓) if you are using (in use) or are not currently using (not in use) the following advanced technologies in your **business unit** (as described on the label on the first page of the questionnaire). If you are currently using the advanced technology, please indicate (✓) if it has been in use for more than 2 years in your **business unit** as well as the location of your suppliers of the technology (as indicated on the purchase order). If you are not currently using a given advanced technology please indicate (✓) if you plan to use it within 2 years in your **business unit**. **Please refer to the enclosed reporting guide** if you have questions or need a definition of the listed technologies.

Design, Engineering and Virtual Manufacturing			Location of your supplier(s) of this technology <i>(Please check all that apply)</i>						
			Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
a. Computer Aided Design (CAD) including simulation technologies / Computer Aided Engineering (CAE) including modeling or simulation technologies	In use	01011 1 <input type="radio"/> →	In use for more than 2 years						
			01012 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
	Not in use	3 <input type="radio"/> →	01014 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
			01013 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
b. Computer Aided Design/ Computer Aided Manufacturing (CAD/CAM)	In use	01021 1 <input type="radio"/> →	In use for more than 2 years						
			01022 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
	Not in use	3 <input type="radio"/> →	01024 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
			01023 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
c. Virtual product development	In use	01031 1 <input type="radio"/> →	In use for more than 2 years						
			01032 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
	Not in use	3 <input type="radio"/> →	01034 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
			01033 1 <input type="radio"/> Yes 3 <input type="radio"/> No						

			Location of your supplier(s) of this technology (Please check all that apply)							
			Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries	
d. Virtual manufacturing	In use	01041 1 <input type="radio"/> →	In use for more than 2 years 01042 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01044 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
		Not in use		3 <input type="radio"/> →	01043 1 <input type="radio"/> Yes 3 <input type="radio"/> No					
	e. Software technologies for systems engineering	In use	01051 1 <input type="radio"/> →	In use for more than 2 years 01052 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01054 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>					
Not in use			3 <input type="radio"/> →		01053 1 <input type="radio"/> Yes 3 <input type="radio"/> No					
f. Electronic exchange and management of CAD files		In use	01061 1 <input type="radio"/> →	In use for more than 2 years 01062 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01064 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>					
	Not in use		3 <input type="radio"/> →		01063 1 <input type="radio"/> Yes 3 <input type="radio"/> No					
	g. Rapid prototyping	In use	01071 1 <input type="radio"/> →	In use for more than 2 years 01072 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01074 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>					
Not in use			3 <input type="radio"/> →		01073 1 <input type="radio"/> Yes 3 <input type="radio"/> No					

Processing, Fabrication and Assembly			Location of your supplier(s) of this technology (Please check all that apply)							
h. Flexible Manufacturing Cells or Flexible Manufacturing Systems (FMC/FMS)	In use	01081 1 <input checked="" type="radio"/> →	In use for more than 2 years 01082 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01084 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01083 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
i. Reconfigurable systems	In use	01091 1 <input checked="" type="radio"/> →	In use for more than 2 years 01092 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01094 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01093 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
j. Lasers used in materials processing (including surface modification)	In use	01101 1 <input checked="" type="radio"/> →	In use for more than 2 years 01102 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01104 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01103 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
k. E-beam processes	In use	01111 1 <input checked="" type="radio"/> →	In use for more than 2 years 01112 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01114 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01113 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
l. Plasma sputtering	In use	01121 1 <input checked="" type="radio"/> →	In use for more than 2 years 01122 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01124 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01123 1 <input type="radio"/> Yes 3 <input type="radio"/> No						

			Location of your supplier(s) of this technology (Please check all that apply)							
			Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries	
m. Robot(s) with sensing capabilities	In use	01131 1 <input checked="" type="radio"/> →	In use for more than 2 years 01132 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	01134 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
		Not in use		3 <input type="radio"/> →	01133 1 <input type="radio"/> Yes 3 <input type="radio"/> No					
	n. Robot(s) without sensing capabilities	In use	01141 1 <input checked="" type="radio"/> →	In use for more than 2 years 01142 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	01144 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>					
Not in use			3 <input type="radio"/> →		01143 1 <input type="radio"/> Yes 3 <input type="radio"/> No					
o. High speed machining		In use	01151 1 <input checked="" type="radio"/> →	In use for more than 2 years 01152 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	01154 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>					
	Not in use		3 <input type="radio"/> →		01153 1 <input type="radio"/> Yes 3 <input type="radio"/> No					
	p. Near net shape technologies	In use	01161 1 <input checked="" type="radio"/> →	In use for more than 2 years 01162 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	01164 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>					
Not in use			3 <input type="radio"/> →		01163 1 <input type="radio"/> Yes 3 <input type="radio"/> No					
q. Micro manufacturing (micro machining or micro moulding)		In use	01171 1 <input checked="" type="radio"/> →	In use for more than 2 years 01172 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	01174 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>					
	Not in use		3 <input type="radio"/> →		01173 1 <input type="radio"/> Yes 3 <input type="radio"/> No					

			Location of your supplier(s) of this technology (Please check all that apply)							
r. Micro Electro Mechanical Systems (MEMS)	In use	01181 1 <input checked="" type="radio"/> →	In use for more than 2 years 01182 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01184 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input checked="" type="radio"/> →	Plan to use within 2 years	01183 1 <input type="radio"/> Yes 3 <input checked="" type="radio"/> No						

Inspection			Location of your supplier(s) of this technology (Please check all that apply)							
s. Automated vision-based systems used for inspection/testing of inputs and/or final products	In use	01191 1 <input checked="" type="radio"/> →	In use for more than 2 years 01192 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01194 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input checked="" type="radio"/> →	Plan to use within 2 years	01193 1 <input type="radio"/> Yes 3 <input checked="" type="radio"/> No						
t. Other automated sensor-based systems used for inspection/testing of inputs and/or final products including e-beam inspection	In use	01201 1 <input checked="" type="radio"/> →	In use for more than 2 years 01202 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01204 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input checked="" type="radio"/> →	Plan to use within 2 years	01203 1 <input type="radio"/> Yes 3 <input checked="" type="radio"/> No						

FOR INFORMATION ONLY

Communications			Location of your supplier(s) of this technology (Please check all that apply)							
u. Local Area Network (LAN) to machines on the business unit (plant) floor	In use	01211 1 <input type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01212 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01214 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01213 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
v. Company-wide computer networks (including LAN, Intranet and WAN)	In use	01221 1 <input type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01222 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01224 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01223 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
w. Inter-company computer networks (including Extranet and EDI)	In use	01231 1 <input type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01232 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01234 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01233 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
x. Wireless communications for production	In use	01241 1 <input type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01242 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01244 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01243 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
y. Wireless communications for office operations and/or marketing/sales activities	In use	01251 1 <input type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01252 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01254 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01253 1 <input type="radio"/> Yes 3 <input type="radio"/> No						

Automated Material Handling			Location of your supplier(s) of this technology (Please check all that apply)							
z. Part identification for manufacturing automation (e.g. bar coding)	In use	01261 1 <input checked="" type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01262 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01264 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input checked="" type="radio"/> →	Plan to use within 2 years	01263 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
aa. Part identification for tracking materials and components (e.g. Radio Frequency Identification, RFID)	In use	01271 1 <input checked="" type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01272 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01274 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input checked="" type="radio"/> →	Plan to use within 2 years	01273 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
bb. Post production tracking of products (e.g. Radio Frequency Identification, RFID)	In use	01281 1 <input checked="" type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01282 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01284 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input checked="" type="radio"/> →	Plan to use within 2 years	01283 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
cc. Automated Storage/ Retrieval System (AS/RS)	In use	01291 1 <input checked="" type="radio"/> →	In use for more than 2 years	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
			01292 1 <input type="radio"/> Yes 3 <input type="radio"/> No	01294 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input checked="" type="radio"/> →	Plan to use within 2 years	01293 1 <input type="radio"/> Yes 3 <input type="radio"/> No						



Integration and Control			Location of your supplier(s) of this technology (Please check all that apply)							
dd. Multi axis capability	In use	01301 1 <input checked="" type="radio"/> →	In use for more than 2 years 01302 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01304 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01303 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
ee. Computer(s) used for control on the business unit (plant) floor	In use	01311 1 <input checked="" type="radio"/> →	In use for more than 2 years 01312 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01314 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01313 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
ff. Adaptive machine control	In use	01321 1 <input checked="" type="radio"/> →	In use for more than 2 years 01322 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01324 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01323 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
gg. Human Machine Interface (HMI) with coordinated motion control	In use	01331 1 <input checked="" type="radio"/> →	In use for more than 2 years 01332 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01334 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01333 1 <input type="radio"/> Yes 3 <input type="radio"/> No						
hh. Computer Integrated Manufacturing (CIM)	In use	01341 1 <input checked="" type="radio"/> →	In use for more than 2 years 01342 1 <input checked="" type="radio"/> Yes 3 <input type="radio"/> No	Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries
		01344 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>								
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	01343 1 <input type="radio"/> Yes 3 <input type="radio"/> No						

			Location of your supplier(s) of this technology (Please check all that apply)							
			Your province or territory	The rest of Canada	United States	Mexico	Europe	Asia Pacific	All other countries	
ii. Supervisory Control and Data Acquisition (SCADA)	In use	01351 1 <input type="radio"/> →	In use for more than 2 years 01352 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01354 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years 01353 1 <input type="radio"/> Yes 3 <input type="radio"/> No							
jj. Process control software	In use	01361 1 <input type="radio"/> →	In use for more than 2 years 01362 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01364 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years 01363 1 <input type="radio"/> Yes 3 <input type="radio"/> No							
kk. Digital, remote controlled process plant control (e.g. Fieldbus or Total Process Control (TPC))	In use	01371 1 <input type="radio"/> →	In use for more than 2 years 01372 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01374 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years 01373 1 <input type="radio"/> Yes 3 <input type="radio"/> No							
ll. Predictive process control software and/or smart machines	In use	01381 1 <input type="radio"/> →	In use for more than 2 years 01382 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01384 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years 01383 1 <input type="radio"/> Yes 3 <input type="radio"/> No							
mm. Use of inspection data in manufacturing control	In use	01391 1 <input type="radio"/> →	In use for more than 2 years 01392 1 <input type="radio"/> Yes } 3 <input type="radio"/> No }	01394 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>						
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years 01393 1 <input type="radio"/> Yes 3 <input type="radio"/> No							

**If you do not use any of the advanced technologies listed in Question 1 → please go to Question 8.**

## Investment in Advanced Technologies

This question explores the intensity of investment in advanced technologies.

2. Over the **last three years, 2005 to 2007**, what percentage of your **business unit's** (as described on the label on the first page of the questionnaire) capital investment in machinery and equipment was spent on advanced technologies (as listed in Question 1)?

- 02010
- 1  0%
  - 2  1% to 5%
  - 3  6% to 10%
  - 4  11% to 15%
  - 5  16% to 25%
  - 6  26% to 50%
  - 7  51% to 75%
  - 8  76% to 100%

## Skill Requirements

The purpose of this question is to provide a general picture of the skills required as a result of advanced technology adoption and the effect of new technology on training needs.

3. Have your **business unit's** (as described on the label on the first page of the questionnaire) employees received any **training** pertaining to the adoption of advanced technologies in the **last three years, 2005 to 2007**?

03010 1  Yes 3  No → **Please go to Question 4**



If **YES**, please indicate in which of the following areas **training** was provided pertaining to the adoption of advanced technologies. Please include both on-site and off-site training.

*Please check (✓) all that apply.*

*Please check  
all that apply*

- a. Acquisition of fundamental competencies  
(reading, writing, second language, counting, calculating) 03021
- b. Computer literacy 03022
- c. Technical skills 03023
- d. Quality control and improvement skills 03024
- e. Safety skills 03025
- f. Business skills 03026
- g. Management skills 03027
- h. Team building skills 03028
- i. Other, *please specify:* 03029txt  03029

## Development and Implementation of Advanced Technologies

This question seeks information on the process of technological change, specifically, how advanced technologies are integrated into your **business unit**.

4. How does your **business unit** acquire or integrate advanced technologies (equipment and/or software)?  
Please check (✓) all that apply.

Please check  
all that apply

- |   |       |                          |
|---|-------|--------------------------|
| a. By purchasing off-the-shelf advanced technology (equipment and/or software)          | 04001 | <input type="checkbox"/> |
| b. By leasing off-the-shelf advanced technology (equipment and/or software)             | 04002 | <input type="checkbox"/> |
| c. By licensing advanced technology   | 04003 | <input type="checkbox"/> |
| d. By customizing or significantly modifying existing advanced technology               | 04004 | <input type="checkbox"/> |
| e. By developing new advanced technologies (either alone or in conjunction with others) | 04005 | <input type="checkbox"/> |
| f. Through merger or acquisition of another firm with advanced technologies             | 04006 | <input type="checkbox"/> |

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## Sources of Information or Assistance

This question seeks information on the process of technological change including the source of information or assistance for the adoption of advanced technologies.

5. Please indicate which of the following sources of information or assistance play an important role for the adoption of advanced technologies in your **business unit**. Please check (✓) all that apply.

Please check  
all that apply

### INTERNAL to your firm

- |                                 |       |                          |
|---------------------------------|-------|--------------------------|
| a. Research                     | 05001 | <input type="checkbox"/> |
| b. Experimental development     | 05002 | <input type="checkbox"/> |
| c. Production engineering       | 05003 | <input type="checkbox"/> |
| d. Corporate head office        | 05004 | <input type="checkbox"/> |
| e. Related business units       | 05005 | <input type="checkbox"/> |
| f. Technology watch program     | 05006 | <input type="checkbox"/> |
| g. Production staff             | 05007 | <input type="checkbox"/> |
| h. Design staff                 | 05008 | <input type="checkbox"/> |
| i. Sales and marketing services | 05009 | <input type="checkbox"/> |

### EXTERNAL to your firm

- |  |       |                          |
|--|-------|--------------------------|
| j. Trade fairs   | 05010 | <input type="checkbox"/> |
| k. Conferences   | 05011 | <input type="checkbox"/> |
| l. Publications  | 05012 | <input type="checkbox"/> |
| m. Patents   | 05013 | <input type="checkbox"/> |
| n. Consultants   | 05014 | <input type="checkbox"/> |
| o. Service firms   | 05015 | <input type="checkbox"/> |
| p. Suppliers   | 05016 | <input type="checkbox"/> |
| q. Customers   | 05017 | <input type="checkbox"/> |
| r. Other firms in your industry  | 05018 | <input type="checkbox"/> |
| s. Universities, technical institutes or colleges  | 05019 | <input type="checkbox"/> |
| t. Government laboratories and programs  | 05020 | <input type="checkbox"/> |
| u. Trade and industry associations   | 05021 | <input type="checkbox"/> |
| v. Not-for-profit organizations (excluding trade and industry associations)                      | 05022 | <input type="checkbox"/> |
| w. Other source (internal or external),<br>please specify: <input type="text" value="05023txt"/> | 05023 | <input type="checkbox"/> |
| x. None of the above   | 05024 | <input type="checkbox"/> |

## Results/Outcome of Adoption

This question seeks information on the results of technology adoption.

6. Please rate the impact of the following **effects** following the adoption of advanced technology by your **business unit**.

EFFECTS	Degree of Impact			
	High	Medium	Low	Not applicable
<b>Improvement in productivity due to:</b>				
a. Reduced labour requirements per unit of output 06001	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
b. Reduced material consumption per unit of output 06002	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
c. Reduced set-up time 06003	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
d. Reduced cycle or processing time 06004	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
e. Reduced error/rejection rate 06005	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Product improvement:</b>				
f. New product features 06006	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
g. Reduced time to market 06007	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
h. Improvement in product quality 06008	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
i. Improved satisfaction of client needs 06009	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Business unit organization changes:</b>				
j. Increased flexibility, customization and/or specialization 06010	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
k. Increased skill requirements 06011	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Business unit efficiencies:</b>				
l. Increased overall equipment (OEE) utilization rate 06012	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
m. Reduced energy consumption 06013	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
n. Reduced energy costs 06014	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
o. Improved integration and coordination of activities with suppliers and/or customers 06015	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Market performance:</b>				
p. Increased market share 06016	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
q. Increased profitability 06017	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
r. Keeping up with competitors 06018	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
s. Opening new export markets 06019	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
t. Increased ability to respond to customer requirements 06020	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
u. Improved ability to adapt to supplier capabilities 06021	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Other:</b>				
v. Reduction of environmental impacts 06022	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
w. Other, <i>please specify</i> : 06023txt <input type="text"/> 06023	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>

## Obstacles to Adoption

This question explores the factors that slowed down or caused problems for your **business unit** during the process of advanced technology adoption.

7. Please rate the importance of the following **obstacles** to the adoption of advanced technologies by your **business unit**.

OBSTACLES	Degree of Importance			
	High	Medium	Low	Not an obstacle
<b>Lack of financial justification due to:</b>				
a. Small market size 07001	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
b. High cost of equipment 07002	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
c. Cost of capital 07003	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
d. Availability of capital 07004	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
e. Little or no cash flow 07005	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
f. Costs to develop software 07006	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
g. Cost of integration of new technology 07007	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
h. Uncompetitive return on investment (ROI) 07008	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
i. Cost of training 07009	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Human resources:</b>				
j. Shortage of skilled workers 07010	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
k. Worker resistance 07011	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Organizational:</b>				
l. Organizational rigidity of the firm 07012	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
m. The decision to adopt is made elsewhere in the firm and not in the business unit itself 07013	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
n. Resistance to introduction of new technology 07014	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
o. Inability to evaluate new technology 07015	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
p. Difficulty or inability to integrate new technology into existing system 07016	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>External support services:</b>				
q. Lack of technical support or services (from service firms, consultants or vendors) 07017	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
r. Lack of private support (programs) for training 07018	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
s. Lack of government support for training 07019	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
t. Lack of government support services (including intelligence centres and networks) 07020	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Other:</b>				
u. Difficulty integrating technology across the supply chain (having technologies work concurrently) 07021	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
v. Equipment or technologies unequipped for small lot fabrication 07022	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
w. Insufficient flexibility of regulations or standards 07023	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
x. Other, please specify: 07024txt <input type="text"/> 07024	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>

## Section B - Advanced Practices

### Business Practices

8. Please indicate which of the following **practices** are regularly used in your **business unit**.  
Please check (✓) all that apply.

Please check  
all that apply

#### Product development

- a. Concurrent engineering 08001
- b. Cross-functional design teams 08002

#### Manufacturing and control management

- c. Electronic work order management 08003
- d. Distribution Resource Planning (DRP) 08004
- e. Lean Manufacturing 08005
- f. Manufacturing Resource Planning (MRPII)/  
Enterprise Resource Planning (ERP) 08006
- g. Just-in-time (JIT) control 08007

#### Quality management (including Lean)

- h. Continuous improvement (including TQM) 08008
- i. Business unit certification (e.g. ISO9000, ISO14000) 08009
- j. Statistical Process Control (SPC) 08010
- k. Quality Management System (QMS) 08011
- l. Quality Function Deployment (QFD) 08012
- m. Six sigma 08013

#### Supply chain/logistics management

- n. Certification of suppliers 08014
- o. E-sourcing (online sourcing)/E-procurement (online procurement) 08015
- p. E-based (online) design/engineering 08016
- q. On-line trading (bartering) 08017
- r. Warehouse Management System (WMS) 08018
- s. Customer Relationship Management (CRM) (includes order management) 08019
- t. Use of forecasting/demand planning software 08020
- u. Advanced Planning and Scheduling (APS) 08021
- v. Transportation management system 08022

#### Others

- w. Competitive Technological Intelligence (CTI) and benchmarking 08023
- x. Sustainable development strategy/Environmental stewardship plan 08024
- y. Product Data Management/Life Cycle Management (PDM/PLM) 08025
- z. Outsourcing/offshoring 08026
- aa. Collaboration(s)/strategic alliance(s) 08027
- bb. None of the above 08028



## Design Practices

**DESIGN ACTIVITIES** may include creative problem solving techniques in the development, engineering, testing and/or communication of designs for products, structures, and/or systems.

9. Do you carry out design activities in your **business unit**?

09010 1  Yes

3  No → *Please go to Question 11*

## Design Practices Expenditures

10. What percentage of your **business unit's** total expenditures (dollar value) in 2007, were on design activities? *Please provide your best estimate.*

10001  %

a. What proportion of these expenditures was in-house (in your business unit)?

10101  %

b. What proportion of these expenditures was by other business units or operations of your larger firm?

10102  %

c. What proportion of these expenditures was for externally acquired design services (not carried out by other business units or operations of your larger firm)?

10103  %

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## Section C - Emerging Technologies

### Geomatics/Geospatial Technologies

**Geomatics** is the science and technology of gathering, analyzing, interpreting, distributing and using geographic information. Geomatics encompasses a broad range of disciplines that can be brought together to create a detailed but understandable picture of the physical world and our place in it. The disciplines include: surveying, mapping, remote sensing, geographic information systems, and global positioning systems.

**Geospatial technologies** refer to hardware and software systems that relate and display data of geographic, spatial or location nature. The technology helps to increase the speed of data interpretation and analysis for geomatic research.

11. Please indicate (✓) whether the following geomatics/geospatial technologies are in use in your **business unit**. If in use, please indicate if it has been in use for more than two years in your **business unit**. If not in use, please indicate if you plan to use it within two years in your **business unit**.

a. Geographic Information Systems (GIS)	In use <sup>11011</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>11012</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use 3 <input type="radio"/> →	Plan to use within 2 years <sup>11013</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
b. Global Positioning System (GPS)	In use <sup>11021</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>11022</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use 3 <input type="radio"/> →	Plan to use within 2 years <sup>11023</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
c. Remote Sensing (RS)	In use <sup>11031</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>11032</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use 3 <input type="radio"/> →	Plan to use within 2 years <sup>11033</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No

If none of the above three geomatics/geospatial technologies are in use in your business unit ► Please go to Question 13

12. In reference to the geomatics/geospatial technologies which you indicated are in use in your **business unit** in Question 11, please indicate their purpose. Please check (✓) all that apply.

	<i>Please check all that apply</i>
a. Planning (visualization)	12001 <input type="checkbox"/>
b. Monitoring supply (including harvesting and extraction activities)	12002 <input type="checkbox"/>
c. Monitoring input or work in process materials in the business unit	12003 <input type="checkbox"/>
d. Monitoring distribution of outputs	12004 <input type="checkbox"/>
e. Other, please specify: <sup>12005txt</sup> <input style="width: 200px;" type="text"/>	12005 <input type="checkbox"/>

## Biotechnologies

**Biotechnology** is defined as the application of science and engineering in the direct or indirect use of living organisms in their natural or modified forms in an innovative manner in the production of goods and services or to improve existing processes.

**Biotechnologies** can be grouped in the following types: DNA (the coding); proteins and molecules (the functional blocks); cell and tissue culture and engineering; process biotechnologies; sub-cellular organisms e.g. gene therapy, viral vectors; others (bioinformatics, nanobiotechnologies, environmental biotechnology, other). For the purpose of this survey, do not include fermentation for beer, bread, cheese or yogurt.

**13.** Please indicate (✓) whether you are using (in use) or are not currently using (not in use) biotechnologies in your **business unit**. If you are currently using biotechnology, please indicate (✓) if it has been in use for more than 2 years in your **business unit**. If you are not currently using biotechnologies please indicate (✓) if you plan to use it within 2 years in your **business unit**.

DNA, proteins and molecules, cell and tissue culture and engineering, process biotechnologies, sub-cellular organisms, and others (do not include fermentation for beer, bread, cheese or yogurt).	In use	13011 1 <input type="radio"/> →	In use for more than 2 years	13012 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use	3 <input type="radio"/> →	Plan to use within 2 years	13013 1 <input type="radio"/> Yes 3 <input type="radio"/> No

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## Nanotechnologies

**Nanotechnology** is the manufacturing of devices and products from molecular or nano-scale components with extraordinary properties. One nanometre (1 nm) is one billionth of a metre (.000000001 m), 3 to 4 atoms wide. Examples of nanotechnology include: nanoparticles, nanomaterials, nanocoatings, nanostructures, nanosystems, nanophotonics, nanoelectronics, nanomedicine, nanobiotechnology.

14. Please indicate (✓) whether you are using (in use) or are not using (not in use) the following nanotechnologies in your **business unit**. If you are using the nanotechnology, please indicate if it has been in use for more than 2 years in your **business unit**. If you are not currently using the nanotechnology please indicate (✓) if you plan to use it within 2 years in your **business unit**.

a. Nanomaterials (includes both organic and inorganic nanocomposites, nanopowders, nanoparticles, nanocoatings, carbon nanotubes)	In use <sup>14011</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>14012</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use <sup>3</sup> 3 <input type="radio"/> →	Plan to use within 2 years <sup>14013</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
b. Nano-devices, including sensors, NEMS, and nano-enabled MEMS	In use <sup>14021</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>14022</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use <sup>3</sup> 3 <input type="radio"/> →	Plan to use within 2 years <sup>14023</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
c. Nanoelectronics, including photonics, nano-optical devices/sensors or light emitters	In use <sup>14031</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>14032</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use <sup>3</sup> 3 <input type="radio"/> →	Plan to use within 2 years <sup>14033</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
d. Nano-enabled industrial processes (e.g. nano-enabled catalysts) including systems such as nanofabrication	In use <sup>14041</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>14042</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use <sup>3</sup> 3 <input type="radio"/> →	Plan to use within 2 years <sup>14043</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
e. Nano-enabled industrial products	In use <sup>14051</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>14052</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use <sup>3</sup> 3 <input type="radio"/> →	Plan to use within 2 years <sup>14053</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
f. Nano-enabled consumer products including cosmetics and health care products	In use <sup>14061</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>14062</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use <sup>3</sup> 3 <input type="radio"/> →	Plan to use within 2 years <sup>14063</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
g. Nano-tools, hardware, instruments and software	In use <sup>14071</sup> 1 <input type="radio"/> →	In use for more than 2 years <sup>14072</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No
	Not in use <sup>3</sup> 3 <input type="radio"/> →	Plan to use within 2 years <sup>14073</sup> 1 <input type="radio"/> Yes 3 <input type="radio"/> No

15. Please indicate (✓) whether you are **developing**, the following nanotechnologies (as listed in Question 14) in your **business unit**. *Please check (✓) all that apply.*

*Please check  
all that apply*

- |   |       |                          |
|---|-------|--------------------------|
| a. Nanomaterials (includes both organic and inorganic nanocomposites, nanopowders, nanoparticles, nanocoatings, carbon nanotubes) | 15001 | <input type="checkbox"/> |
| b. Nano-devices, including sensors, NEMS, and nano-enabled MEMS   | 15002 | <input type="checkbox"/> |
| c. Nanoelectronics, including photonics, nano-optical devices/sensors or light emitters   | 15003 | <input type="checkbox"/> |
| d. Nano-enabled industrial processes (e.g. nano-enabled catalysts) including systems such as nanofabrication                      | 15004 | <input type="checkbox"/> |
| e. Nano-enabled industrial products   | 15005 | <input type="checkbox"/> |
| f. Nano-enabled consumer products including cosmetics and health care products  | 15006 | <input type="checkbox"/> |
| g. Nano-tools, hardware, instruments and software   | 15007 | <input type="checkbox"/> |
| h. None of the above  | 15008 | <input type="checkbox"/> |

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## Section D - General Questions

### Success Factors

This question collects information on business success factors.

16. Please rate the importance of the following factors for the success of your **business unit**.

SUCCESS FACTORS	Degree of Importance			
	High	Medium	Low	Not applicable
<b>Products and marketing</b>				
a. Developing new products (goods or services) 16001	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
b. Improving existing products (goods or services) 16002	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
c. Entering new markets 16003	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Process</b>				
d. Developing new methods of manufacturing or producing products 16004	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
e. Improving existing methods of manufacturing or producing products 16005	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
f. Introducing new logistics, delivery or distribution methods for your inputs or products (goods or services) 16006	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
g. Introducing significantly improved logistics, delivery or distribution methods for your inputs or products (goods or services) 16007	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
h. Introducing new supporting activities for processes such as maintenance systems or operations for purchasing, accounting or computing 16008	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
i. Introducing significantly improved supporting activities for processes such as maintenance systems or operations for purchasing, accounting or computing 16009	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
j. Reducing manufacturing costs 16010	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
k. Developing new manufacturing technology(ies) 16011	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
l. Using new materials 16012	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
m. Reducing cycle time for new product development and market introduction 16013	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Human resources</b>				
n. Using teams (e.g. cross-functional, quality improvement) 16014	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
o. Carrying out ongoing technical training 16015	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
p. Recruiting talent 16016	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Financial resources</b>				
q. Securing funding from conventional sources (i.e. banks) 16017	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
r. Securing support from venture capitalists 16018	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
s. Securing support from angel investors/family 16019	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
t. Securing government support funding 16020	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>
<b>Other</b>				
u. Implementing new information and communications technologies (ICT) 16021	5 <input type="radio"/>	3 <input type="radio"/>	1 <input type="radio"/>	0 <input type="radio"/>

## Innovation

Innovation is vital for economic growth and development. Responses to these questions will allow an exploration of the relationship between advanced technology use and innovation.

**17. A PRODUCT INNOVATION** is the market introduction of a **new** good or service or a **significantly improved** good or service. The innovation (new or improved) must be new to your business unit. Exclude the simple resale of new goods purchased from other business units and changes of a solely aesthetic nature (i.e. colour change, model change, label change, etc.).

During the last three years, **2005 to 2007**, did your **business unit** introduce?

		Yes	No
a. <u>New or significantly improved goods?</u>	17001	1 <input type="radio"/>	3 <input type="radio"/>
b. <u>New or significantly improved services?</u>	17002	1 <input type="radio"/>	3 <input type="radio"/>

**18.** During the last three years, **2005 to 2007**, were **ANY** of your new or significantly improved products (goods or services) introduced by your **business unit**:

		Yes	No	Do not know
a. <u>A first in your province/territory?</u>	18001	1 <input type="radio"/>	3 <input type="radio"/>	0 <input type="radio"/>
b. <u>A first in Canada?</u>	18002	1 <input type="radio"/>	3 <input type="radio"/>	0 <input type="radio"/>
c. <u>A first in North America?</u>	18003	1 <input type="radio"/>	3 <input type="radio"/>	0 <input type="radio"/>
d. <u>A world first?</u>	18004	1 <input type="radio"/>	3 <input type="radio"/>	0 <input type="radio"/>

**19.** A **PROCESS INNOVATION** is the implementation of a **new** or **significantly improved** production process, distribution method, or support activity for your goods or services. The innovation (new or improved) must be new to your business unit.

During the last three years, **2005 to 2007**, did your **business unit** introduce?

		Yes	No
a. <u>New or significantly improved methods of manufacturing or producing goods or services?</u>	19001	1 <input type="radio"/>	3 <input type="radio"/>
b. <u>New or significantly improved logistics, delivery or distribution methods for your inputs, goods or services?</u>	19002	1 <input type="radio"/>	3 <input type="radio"/>
c. <u>New or significantly improved supporting activities for your processes, such as maintenance systems or operations for administration, purchasing, accounting, or computing?</u>	19003	1 <input type="radio"/>	3 <input type="radio"/>

20. During the last three years, **2005 to 2007**, were **ANY** of your new or significantly improved processes introduced by your **business unit**:

		Yes	No	Do not know
a. A first in your province/territory?	20001	1 <input type="radio"/>	3 <input type="radio"/>	0 <input type="radio"/>
b. A first in Canada?	20002	1 <input type="radio"/>	3 <input type="radio"/>	0 <input type="radio"/>
c. A first in North America?	20003	1 <input type="radio"/>	3 <input type="radio"/>	0 <input type="radio"/>
d. A world first?	20004	1 <input type="radio"/>	3 <input type="radio"/>	0 <input type="radio"/>

21. An **ORGANIZATIONAL INNOVATION** is the implementation of new or significant changes in your firm or your business unit's structure or management methods that are intended to improve your business unit's use of knowledge, the quality of your goods or services, or the efficiency of work flows.

A **MARKETING INNOVATION** is the implementation of new or significantly improved designs or sales methods to increase the appeal of your goods or services or to enter new markets.

During the last three years, **2005 to 2007**, did your **business unit** introduce:

		Yes	No
<b>ORGANIZATIONAL INNOVATION</b>			
a. New or significantly improved knowledge management systems to better use or exchange information, knowledge and skills within your firm	21001	1 <input type="radio"/>	3 <input type="radio"/>
b. Major changes to the organization of work within your enterprise, such as changes in the management structure or integrating different departments or activities	21002	1 <input type="radio"/>	3 <input type="radio"/>
c. New or significant changes in external relations with other firms or public institutions, such as through alliances, partnerships, outsourcing or sub-contracting	21003	1 <input type="radio"/>	3 <input type="radio"/>
<b>MARKETING INNOVATION</b>			
d. Significant changes to the design or packaging of a good or service. Exclude routine/ seasonal changes such as clothing fashions	21101	1 <input type="radio"/>	3 <input type="radio"/>
e. New or significantly changed sales or distribution methods, such as internet sales, franchising, direct sales or distribution licenses	21102	1 <input type="radio"/>	3 <input type="radio"/>



## Research and Development (R&D)

These questions will provide data on the type of involvement in R&D and intensity of R&D being carried out in the business unit.

22. Please indicate (✓) the categories below which describe your **business unit's** involvement in R&D activities during the last three years, **2005 to 2007**. Please **exclude** quality control, routine testing, style changes, minor adaptations and market research. Please include technological advances accomplished by operating personnel. *Please check (✓) all that apply.*

Please check  
all that apply

- |  |       |                          |
|--|-------|--------------------------|
| a. Research and development (R&D) activities within your organization, performed by your business unit   | 22001 | <input type="checkbox"/> |
| b. R&D performed on your behalf by other business units or R&D laboratories that are part of the larger firm to which your business unit belongs | 22002 | <input type="checkbox"/> |
| c. R&D performed by other business units that are part of your larger firm (exclude R&D performed on your behalf as described in option b above) | 22003 | <input type="checkbox"/> |
| d. Development of new products (goods or services) or processes using operating personnel in your business unit                                  | 22004 | <input type="checkbox"/> |
| e. R&D performed by your business unit jointly with other business unit(s) that are not part of your larger firm                                 | 22005 | <input type="checkbox"/> |
| f. Contracting out R&D services performed by other firms or by public or private research organizations and purchased by your business unit      | 22006 | <input type="checkbox"/> |
| g. None of the above   | 22007 | <input type="checkbox"/> |

23. Please provide your best estimate of the percentage of the full-time employees in your **business unit** in **2007** who were involved in **research and development activities**. Please **exclude** employees involved in quality control, routine testing, style changes, minor adaptations and market research.

23001  %

## General Information

24. Please indicate (✓) the location of the head office of your **controlling firm** (all business units and operations in Canada or in other countries that comprise your company).  
Please check (✓) **one** option only.

Please check  
**one** option only

- |                               |       |                       |
|-------------------------------|-------|-----------------------|
| a. In your province/territory | 24001 | <input type="radio"/> |
| b. In the rest of Canada      | 24002 | <input type="radio"/> |
| c. United States              | 24003 | <input type="radio"/> |
| d. Mexico                     | 24004 | <input type="radio"/> |
| e. Europe                     | 24005 | <input type="radio"/> |
| f. Asia Pacific               | 24006 | <input type="radio"/> |
| g. All other countries        | 24007 | <input type="radio"/> |

25. Please provide your best estimate of the **percentage of your business unit's total revenue** that came from the sale of products (goods or services) to clients in the following geographical markets in 2007.

- |                               |       |                      |          |
|-------------------------------|-------|----------------------|----------|
| a. In your province/territory | 25001 | <input type="text"/> | %        |
| b. In the rest of Canada      | 25002 | <input type="text"/> | %        |
| c. United States              | 25003 | <input type="text"/> | %        |
| d. Mexico                     | 25004 | <input type="text"/> | %        |
| e. Europe                     | 25005 | <input type="text"/> | %        |
| f. Asia Pacific               | 25006 | <input type="text"/> | %        |
| g. All other countries        | 25007 | <input type="text"/> | %        |
| <b>TOTAL</b>                  |       | <b>100</b>           | <b>%</b> |

Please make a copy for your records which may be referenced if we need to follow-up with any specific issues. Thank you.

Please return the completed survey in the enclosed return-envelope. Thank you very much for your participation.

**Comments**

FOR INFORMATION ONLY