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# *ICT* Measurement The Canadian Experience

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# The Canadian Context

- ◆ Politicians, public servants and statisticians came together early to launch measurement programs
- ◆ Canada assessed benefits and developed supportive policies
- ◆ Framework conditions, tax neutrality and security rather than subsidies
- ◆ Need for measurement and analysis recognised
- ◆ Funding e-com and ICT data gaps was a priority

# Overview

- ◆ This Thing Called *e-com*
- ◆ The International and Canadian Contexts
- ◆ Some *e-com* Basics
- ◆ Canadian data programs and outputs
- ◆ Gaps and Issues.....
- ◆ What's next?

# This Thing Called *ICT*

- ◆ What is e-commerce? Why is it important?
- ◆ Transformative
- ◆ Impacts on competitiveness and relative positions
- ◆ Phenomenon or real change?
- ◆ Impacts on business and consumer
- ◆ Economy and society
- ◆ On development too!
- ◆ A social, cultural and economic phenomenon

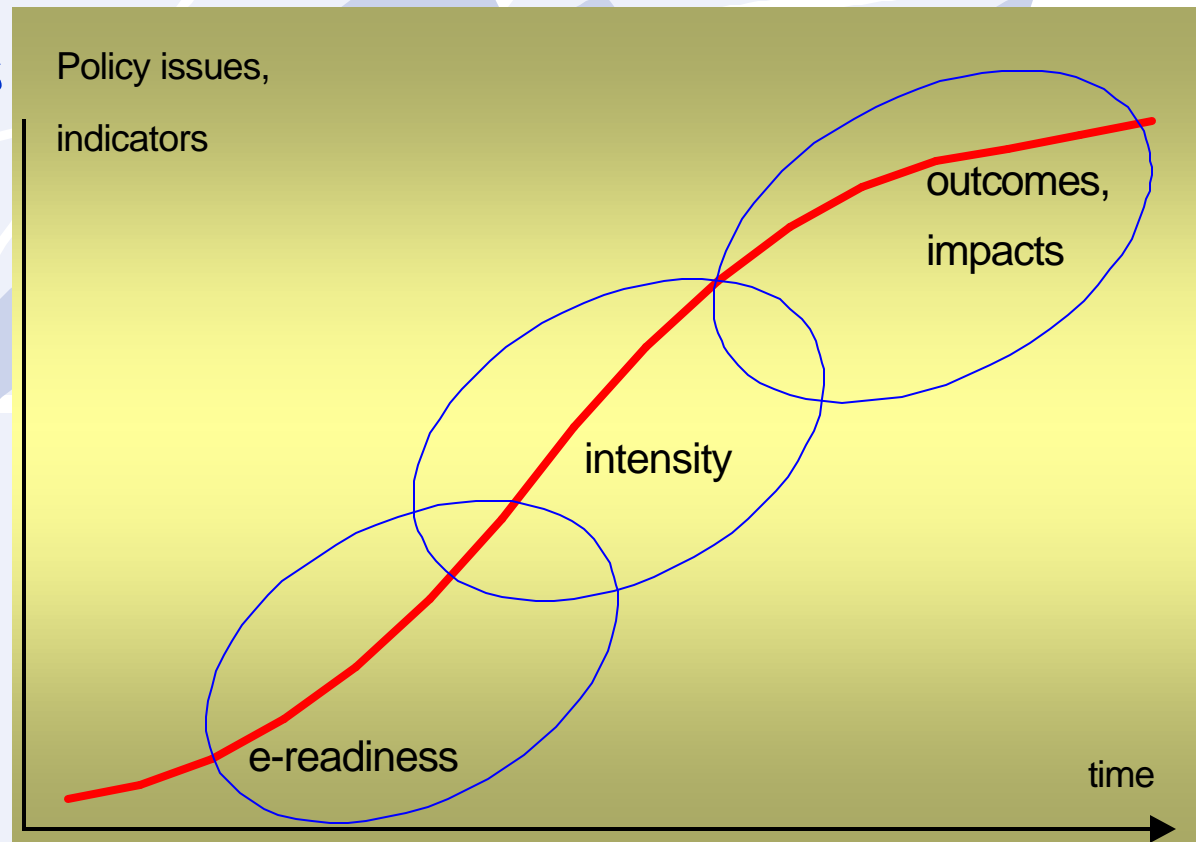
# This Thing Called *ICT*

- ◆ What do we need to measure.... And why?
- ◆ Must reflect impact on economy and society
- ◆ Many flows and activities that enable
- ◆ Also inhibitors and barriers
- ◆ Need understanding at all stages
- ◆ Outputs and productivity; Costs and benefits supply/demand sides
- ◆ Lots of hype and self-serving measures
- ◆ Measures not produced automatically

# But .....

## Reflect state of evolution

- Establish benchmarks
- Basis for comparison
- Reflect reality
- Ensure relevance
- Drop and add measures over time



Source: Industry Canada 1999

# This Thing Called *e-com*

- ◆ What to measure? Is focus Macro or Micro?
- ◆ Not sufficient to measure a single activity
- ◆ Impacts many flows and aggregates for SNA
- ◆ There are many inputs that combine
  - Manufacturing – ICT equipment
  - Infrastructure - Telecom services
  - Facilitating - Software and ISPs
  - Activities and outputs – Sales and services
- ◆ National macro data was first priority

# This Thing Called *e-com*

BUT

- ◆ Micro measures and analysis relevant too
- ◆ Impacts on innovation and competitiveness
- ◆ Need policies, measures and analysis together
- ◆ Are clusters only geographic?
- ◆ Virtual clustering and partnerships



# This Thing Called *e-com*

- ◆ Is international comparison required?
- ◆ As never before
- ◆ Potential to be an equaliser
- ◆ But threat to be further excluded those excluded
- ◆ Monitoring The Digital Divide....and Beyond

# This Thing Called *e-com*

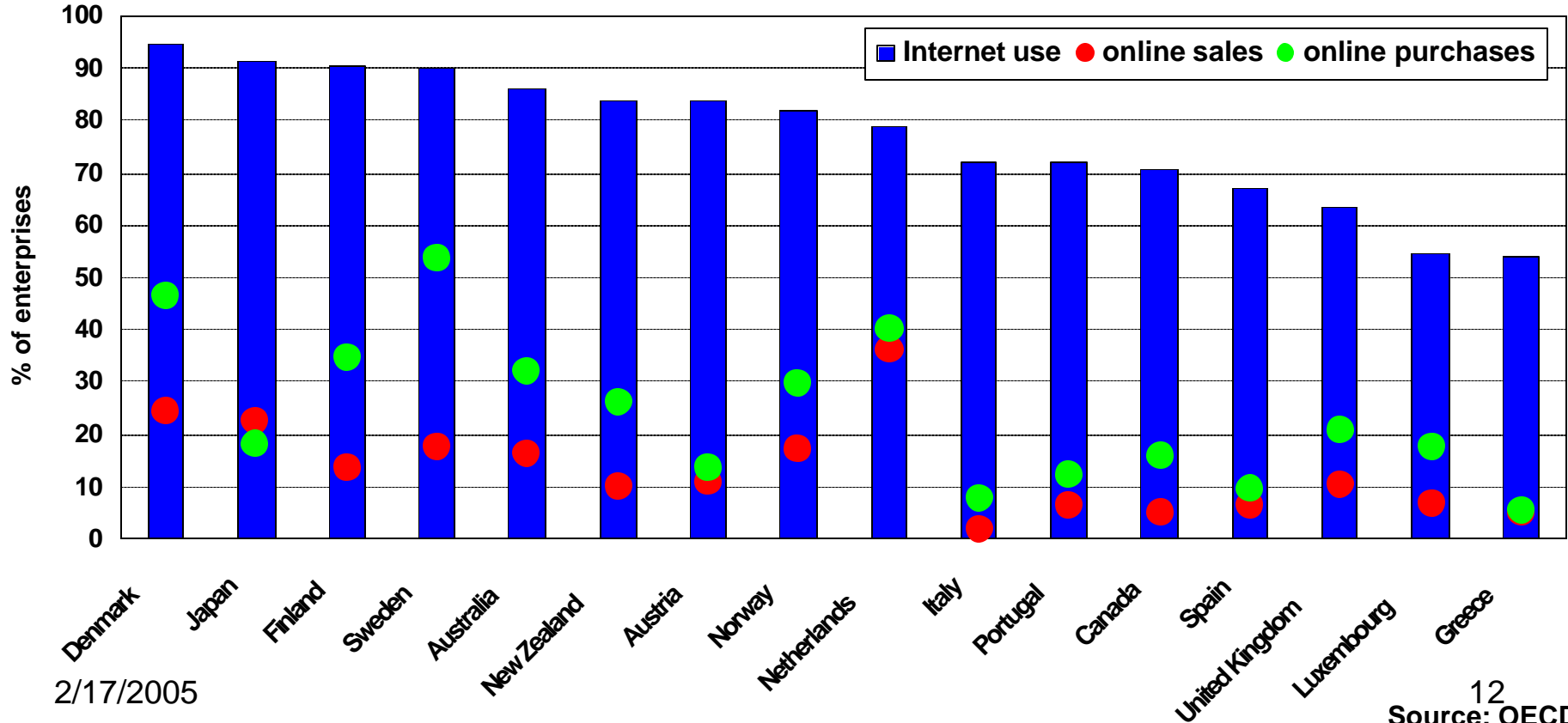
- ◆ New and unique challenges for stat agencies
- ◆ Measurement is difficult. Response burden?
- ◆ Are traditional vehicles appropriate?  
Expectations for speed relevance and comprehensiveness are very high
- ◆ Many guesses or self-serving “estimates” confound the objective survey taker

# The International Context

- ◆ Rapid change threatened information chaos
- ◆ Good news! Order, it seems, prevails
- ◆ Many understand need for objective data
- ◆ OECD led the way with definitions & questions
- ◆ Government & business had similar data needs
- ◆ Encourage development & use for competitiveness
- ◆ Not all countries follow same path
- ◆ Caution: consider measurement needs and abilities of less developed economies

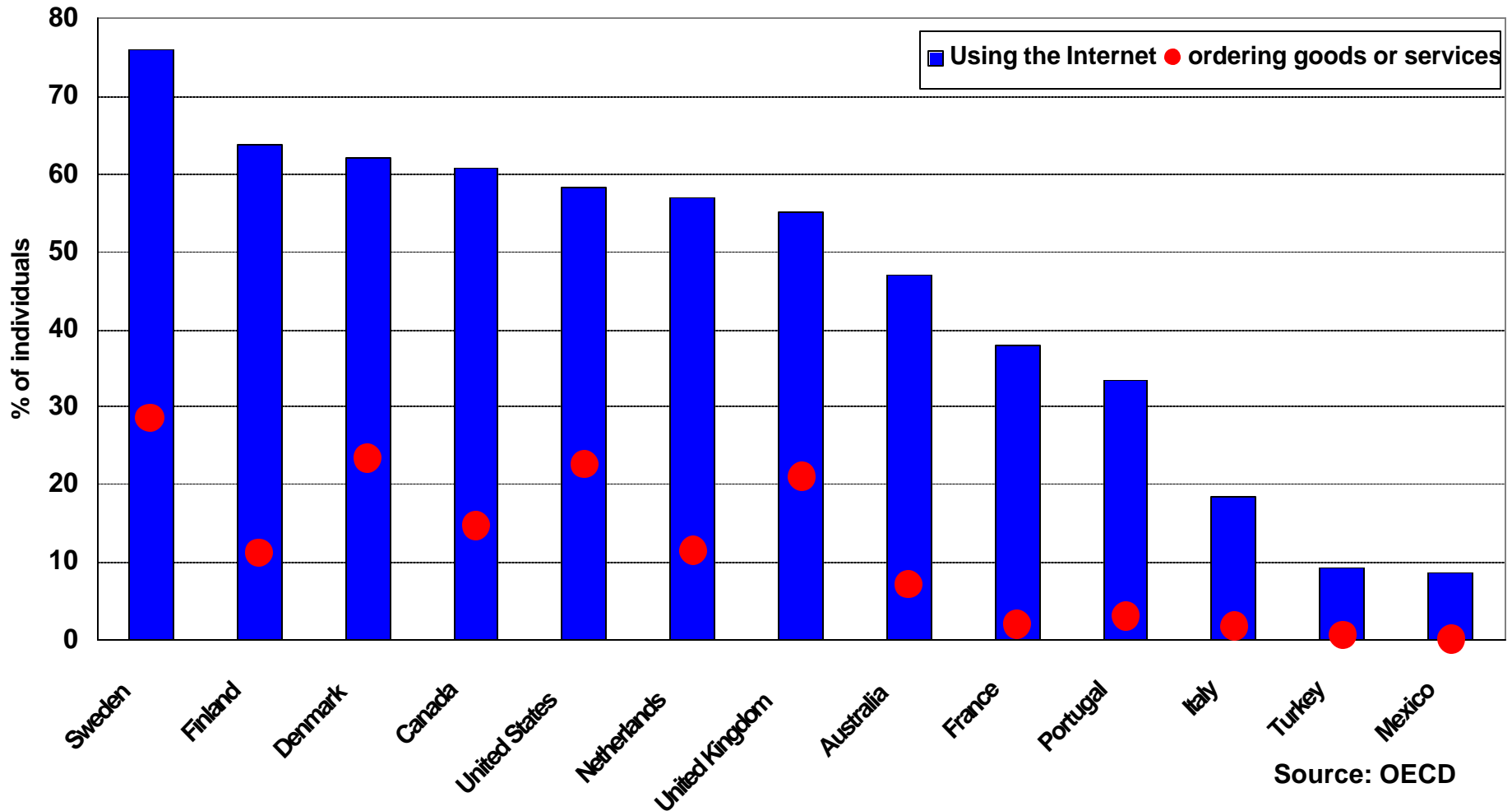
# Measurements now common for business activity ...

Business e-commerce, 2001



# ...and households too

People and e-commerce, 2001 (or latest year)



# *e-commerce* basics

- ◆ Common, accepted definitions are Key
- ◆ In 2000 OECD set Broad and Narrow terms
- ◆ Focus on order; not delivery or payment
- ◆ Internet vs. “computer-mediated networks”

# e-commerce basics

| E-commerce transactions  | OECD definitions   | Guidelines for the interpretation of the definitions (WPIIS proposal April 2004)   |
|--------------------------|--|--|
| <b>BROAD definition</b>  | An <b>electronic transaction</b> is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over <b>computer-mediated networks</b> . The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line. | <b>Include:</b> orders received or placed on any online application used in automated transactions such as Internet applications, EDI, Minitel or interactive telephone systems.   |
| <b>NARROW definition</b> | An <b>Internet transaction</b> is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over the <b>Internet</b> . The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.                 | <b>Include:</b> orders received or placed on any Internet application used in automated transactions such as Web pages, Extranets and other applications that run over the Internet, such as EDI over the Internet, Minitel over the Internet, or over any other Web enable application regardless of how the Web is accessed (e.g. through a mobile or a TV set, etc.). <b>Exclude:</b> orders received or placed by telephone, facsimile or conventional e-mail. |

# *e-commerce* basics

- ◆ Common, accepted definitions are key
- ◆ In 2000 OECD set Broad and Narrow terms
- ◆ Focus on order; not delivery or payment
- ◆ Internet vs. “computer-mediated networks”
- ◆ OECD model questionnaire modules
- ◆ Distinguish type of transaction: B2B, B2C, B2G
- ◆ Enterprise vs. establishment activity



# Canadian experience: Data programs and results

## Infrastructure:

- ◆ Telecommunications and cable surveys
- ◆ Software, ISP and related surveys

## Applications:

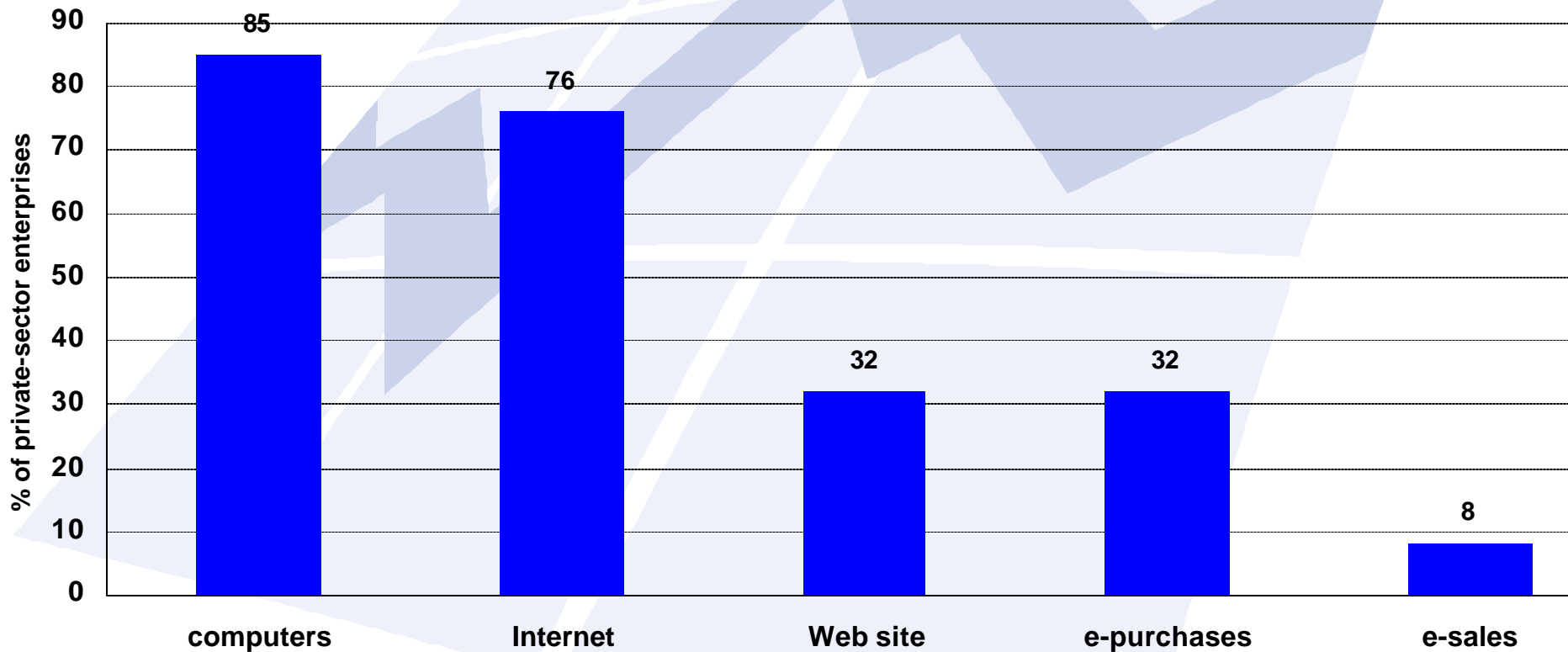
- ◆ Electronic commerce and technology
- ◆ Household (Individual) Internet Use
- ◆ General Social Survey

## Analysis:

- ◆ Industry Canada and Connectedness Series

# *e-com* : Canadian Measurements

## Business e-commerce, Canada 2002



# Canada: Value of Internet Sales

| Industry  | 1999                 | 2002          | 2002                    |
|---|----------------------|---------------|-------------------------|
|   | (millions of CAN \$) |               | % of operating revenues |
| Manufacturing                                   | 900                  | 1,957         | 0.3                     |
| Wholesale trade                                 | 156                  | 3,693         | 1.1                     |
| Retail trade                                    | 611                  | 1,718         | 0.5                     |
| Transport and warehousing                       | 164                  | 1,924         | 2.4                     |
| Information and cultural                        | 553                  | 829           | 1.2                     |
| Finance and insurance                           | 321                  | 852           | 0.4                     |
| Professional, scientific and technical services | 406                  | 983           | 1.4                     |
| Accommodation and food services                 | 429                  | 166           | 0.4                     |
| <b>All private sector</b>                       | <b>4,180</b>         | <b>13,339</b> | <b>0.6</b>              |

Source: Statistics Canada

Of which, in 2002:      **B2B = 73%,**  
                                  **foreign = 22%**

**Both proportions declining**

# e-com by business size - 2002

|                        | Computers | Internet | Web sites | e-purchases | e-sales |
|------------------------|-----------|----------|-----------|-------------|---------|
| % of enterprises       |           |          |           |             |         |
| small                  | 84        | 73       | 27        | 29          | 7       |
| medium                 | 97        | 92       | 62        | 47          | 13      |
| large                  | 100       | 99       | 77        | 57          | 16      |
| All                    | 85        | 76       | 31        | 32          | 8       |
| % of economic activity |           |          |           |             |         |
| All                    | 98        | 97       | 83        | 65          | 27      |

Source: Statistics Canada

# e-commerce and people

## Canada 2001

|                             | <u>number of<br/>households</u> | <u>% of<br/>households</u> |
|-----------------------------|---------------------------------|----------------------------|
| All households              | 12,007                          | 100                        |
| Internet use (any location) | 7,228                           | 60                         |
| Internet shopper            | 3,976                           | 33                         |
| window shopper              | 1,731                           | 14                         |
| <b>e-commerce</b>           | <b>2,244</b>                    | <b>19</b>                  |
| e-payment                   | 1,778                           | 15                         |

Source: Statistics Canada

# e-commerce and people

## People and e-commerce, Canada 2001

| number of orders<br>(millions)  | total value<br>(billions of CAN \$) | average number<br>of orders | average value<br>per order<br>(CAN \$) |
|---------------------------------|-------------------------------------|-----------------------------|--|
| 13.4                            | 2                                   | 6                           | 148                                    |
| of which, foreign transactions: |                                     |                             |  |
| 44% of orders                   |                                     |                             |  |
| 35% of expenditures             |                                     |                             |  |

Source: Statistics Canada

# e-business processes

- ◆ Hierarchical structures and information
- ◆ transmission and processing
  - controls and inertia
- ◆ Intra- and inter-firm integration
- ◆ Linkages to innovation
  - Product
  - Process
- ◆ Identification of differences
  - by industry
  - by firm size
- ◆ Measurement implications
  - ◆ - generic or specific surveys
  - ◆ - practical difficulties and compromises
  - ◆ - out of the box approaches?

# Outstanding Issues-What's next

- ◆ Data gaps
- ◆ Linking ICT diffusion and performance
- ◆ Comparability and continuity
- ◆ Enterprise vs. establishment
- ◆ Cross-economy vs.. Industry-Specific
- ◆ Response burden and the use of EDR
- ◆ Analytical outputs
- ◆ **Differential development – don't be too satisfied ..... too soon**



# And then .....

- ◆ Take small steps in recognition of S Curve
- ◆ Add questions; exploit existing vehicles
- ◆ Progress is slow and difficult; it was for Canada too
- ◆ In the end we are succeeding
- ◆ **Differential development – don't be too satisfied  
..... too soon**
- ◆ ICTs can be liberating or discriminating
- ◆ Statistics Canada supports efforts to exploit ICTs as a liberating technology and wishes to remain fully engaged