specialized areas such as the insurance business, stockbrokers, and various government departments, are quite common in Canada, and employ the latest advances in data processing technology both in terms of hardware and software.

Canadian department store operators Simpsons Limited of Toronto and Hudson's Bay Company of Winnipeg have announced their participation in a trial project, co-sponsored by Bell Canada of Montreal, linking consumer terminals to a data base of information about shopping, banking and other topics. The 491 terminals will be located in homes and busy commercial outlets in Ontario and Quebec, and the information will be carried on existing telephone lines.

Numerous Canadian companies produce proprietary systems software packages for such applications as data base management, file retrieval and data manipulation.

Applications software is produced for general business use in all fields, with an emphasis on small business systems for financial management in small companies.

EXAMPLES OF CANADIAN KNOW-HOW

A Canadian company is currently developing a full-service, non-television entertainment package by which broadcast cable subscribers can have personal computers (small microprocessor-based systems) linked with a centrally located switching computer that provides access to a wide range of data bases.

Another Canadian company markets a two-way interface that turns a stand-alone electronic typewriter into a multiple-use computer terminal.

Advantages of Telidon

One of Canada's recent success stories is the development of Telidon, one of three videotex systems that have been classified as world standards by the International Telegraph and Telephone Consultative Committee, an agency sponsored by the United Nations.

Developed by a government research and development agency, Telidon offers higher resolution and greater flexibility than systems developed elsewhere, and has the capability of terminal-to-terminal communications. The latter feature places this Canadian system well within sight of full-scale "electronic mail."

Telidon-compatible software for microcomputers has been developed as well, further extending the system's potential usefulness.

A field in which a combination of Canadian data processing, computer and telecommunications expertise has been applied is that of mobile data communications.

Automatic Airline Operations

A completely automatic airline flight operations system has been developed in Canada, in which aircraft are linked to a central computer system by means of an on-board computer communicating by means of digital data radio transmission. It also integrates previously separate functions such as crew and aircraft scheduling. The system has already been supplied to a Canadian, a U.S., and two European airlines.

Taxi Despatch System

A taxi company in Canada's capital city, Ottawa, utilizes a Canadian-developed advanced digital dispatch system. The standard taxi radio interfaces with a small computer with a one-line message display and a small key pad. Telephone orders are entered into a central computer at the dispatch office, which automatically allocates them to available vehicles. The system, because it is digital, has significantly reduced radio traffic and resulted in faster service.

Urban Transit and Vehicle Control

An urban bus transit system in Ontario is evaluating a computerized route monitoring system. The position of each bus along a route is tracked via digital radio (reading an on-board odometer). The location of each bus is continuously updated in a central computer data base. Potential bus passengers can call the computer by telephone and receive an automatically generated voice message giving the estimated time of arrival of the next bus at any bus stop. This system, too, has been developed and is being manufactured in Canada.

A distributed intelligence system for monitoring and supervisory control of haulage vehicle traffic in an open-pit mine is another Canadian mobile data communications system development. Data from all operating trucks are sent via digital radio to a central dispatch location. A computer tracks truck cycle times, queueing times, loading times, shovel idle times and similar data. This has resulted in significantly greater efficiency of the mine and optimization of equipment utilization.

Canadian data processing expertise has found highly specialized niches in which it has established a world leadership position. Problem-oriented, the Canadian computer industry thrives on challenges presented to it from every imaginable kind of business, industrial or institutional activity.

Ottawa: Canada's Capital and Computer City

CANADA'S capital city, Ottawa, has emerged as the country's biggest centre for advanced technology research and manufacturing, particularly in telecommunications.

During World War II, Canada's National Research Council vastly increased its facilities for developing sophisticated electronic military equipment. Personnel jumped from 200 to more than 2,000, providing a nucleus for an industry using fast-changing electronic technology.

Computing Devices of Canada, the first of the new technology plants, was founded in 1948 as a maker of signal-processing computers, navigational aids and other military goods. Ten years later, what is now known as Northern Telecom Limited, Canada's biggest high-technology company, established laboratory facilities in space provided by Computing Devices. The facilities have become Bell Northern Research, which has 2,000 employees in the region and is the largest private research facility in Canada.

Northern Telecom, owned mostly by Bell Canada, has branches throughout Canada and in six foreign countries including Malaysia and Singapore. It is Canada's biggest producer of semiconductors, which it uses for its digital transmission equipment. About half the semiconductors are produced in Ottawa.

During the 1960s and 1970s, a dizzying series of new companies spun off from the older set-ups, so that now there are more than 100 high-technology manufacturers in the area. From the 20,000 people connected with the industry now, there are predictions of a work force five times that by 1990.

For example, Mitel Corporation has grown from 43 employees at the beginning of 1975 to a workforce of 2,400.

The company has doubled its earnings every year in the course of becoming one of the world's leading manufacturers of PABX (private automatic branch exchange) systems–microswitching telephone exchanges that handle internal and external communications in offices and in homes.

Two universities, Ottawa and Carleton, and a technical community college, Algonquin, have developed their curricula to respond to the demand for skilled personnel, and industry is working closely with them.

Government research facilities and libraries, official purchases of advanced equipment and financial help for research and development have also helped make Ottawa a high technology centre.