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Market study on the Mexican market
for computers and software
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**MARKET STUDY ON THE MEXICAN MARKET
FOR COMPUTERS AND SOFTWARE**

This market study has been prepared to assist Canadian firms interested in exporting to Mexico. While an effort has been made to examine the most important aspects of the sector, the study is not exhaustive. Companies will have to tailor their marketing approach according to their particular interests and circumstances.

Further assistance can be obtained by addressing requests directly to the Commercial Division of the Canadian Embassy in Mexico City located at Calle Schiller No. 529, Col. Polanco, 11580 Mexico, D.F., telephone (011-525) 254-3288, telex 177-1191 (DMCNME) and fax (011-525) 545-1769 (sending from Canada); or the Latin America and Caribbean Trade Division, External Affairs and International Trade Canada, 125 Sussex Drive, Ottawa, Ontario, K1A 0G2; phone (613) 996-8625; fax (613) 943-8806.

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FOR COMPUTERS AND SOFTWARE

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1. BACKGROUND

In 1981, the Mexican government established (but never officially published) the Computer Industry Development Plan, which defined a complete set of objectives including the formation of an internationally competitive local industry to be increasingly oriented towards exports, as well as the promotion of industrial linkages to increase local contents and the investment in research and development to improve the control of technology and strengthen competitiveness. In order to achieve these objectives, the plan established a comprehensive set of policy instruments, such as fiscal incentives, import controls and preferential tariffs, financial support, government procurement and foreign investment regulations.

Gradually, these incentives have been reduced. In 1985, imports of parts, components and subassemblies were freed from import licenses and a reduction of tariffs occurred. The present administration has ended the provision of preferential tariffs for the import of parts and components by manufacturing firms operating within the Plan. It also announced the liberalization of the computer sector on April 3, 1990, until then still protected by import licences. A 20% import duty was assessed on all automatic data processing machines, while all parts for the manufacture of computers, except modular circuits, pay a 5% duty and modular circuits for retail, 15%.

Additionally, the decree for the establishment of fiscal incentives for the promotion of the computer industry was published on April 3, 1990. This program was designed within the new administration's policy of economic internationalization and deregulation in order to strengthen the local computer industry. It consists of a 100% waiver of all import taxes on imported components and equipment. The beneficiaries of these incentives are those companies manufacturing components or finished products in Mexico, that are registered as computer companies with the Secretariat for Commerce and Industrial Development (Secretaría de Comercio y Fomento Industrial SECOFI). The total value of imports subject to tax incentives may not exceed 80% of the sum of the value incorporated domestically (locally produced sales minus imports) plus net investment in national fixed assets plus two times the investment in research and development made by these firms. Additionally, the value incorporated nationally should at least represent 30% of direct sales of locally manufactured products.

These incentives will continue benefitting the manufacturers previously within the Development Plan and will attract some new firms to register with SECOFI. These measures will both foster continued domestic manufacture as well as an increase in imports of computers, while at the same time sustaining the growth of all related industries, such as the components, software and services sectors.

2. ECONOMIC ENVIRONMENT

With the objective of reducing the inflation rate, the Mexican authorities implemented a stabilization program in 1988, called the Economic Solidarity Pact, which features traditional austerity measures, entailing tight fiscal and monetary policies and unorthodox measures, such as price, wage and exchange rate controls. This program has been the cornerstone of Mexico's economic policy over the past four years and has resulted in a drastic reduction of the inflation rate, from an annual rate of 159.2% in 1987 to 51.7% in 1988 and 19.7% in 1989. Inflation rebounded to 29.9% in 1990 but the Mexican government aims to achieve a 14% inflation rate in 1991, which seems a reasonable estimate based on an annual inflation rate of 13.3% as of October 1991. Along with the objective of consolidating the progress made in price stabilization, Mexico's macroeconomic policy in the short run aims to reaffirm gradual and sustained economic recuperation, basically by establishing the necessary conditions to encourage national and foreign investment and by stimulating local demand.

After the 1986 recession, Mexico's gross domestic product (GDP) increased a moderate 1.7% in 1987 and an additional 1.3% in 1988. Domestic economic activity recovered for the third consecutive year in 1989 with a growth rate of 3.1% and further 3.9% in 1990 to reach \$234 billion (1). With an 81.1 million population, per capita GDP was estimated at \$2,874 in 1990. Additionally, manufacturing output grew by 5.2% in 1990 in real terms, private investment and consumption expanded 13.6% and 5.2% respectively and public investment was up 12.8%. During the 1991-1994 period GDP is expected to maintain an average annual growth rate of 2.5%-3%. Preliminary figures for 1991 place GDP growth at 4.5%-5% for this year.

In an effort to revitalize and open the Mexican economy, the Mexican Government undertook a series of structural changes, including the accession to the General Agreement on Tariffs and Trade (GATT) on August 24, 1986 leading to an extensive trade liberalization process: import permits were eliminated on all but 198 of the total 11,812 tariff items based on the Harmonized System adopted in 1988. Official import prices are no longer applicable, nor the 5% export development tax, and import duties were lowered from a maximum of 100% in 1982 to 20% since January 1988. The weighted average tariff rate is now 10.4%. The automotive and computer industries have also been liberalized, through the elimination of prior import permits, to allow free entry of products in these industries. The approval of the North

1. Note: All values in this report, unless otherwise stated (Mexican pesos, Mex\$, Canadian dollars, Cdn\$, etc) are quoted in United States dollar equivalents.

American Free Trade Agreement will further strengthen trade between Canada, the United States and Mexico.

According to official data from the Mexican Secretariat of Commerce and Industrial Development (SECOFI), Mexico's trade balance in 1990 dropped once again to a \$3 billion deficit from -\$645 million in 1989. Exports increased by 17.5% in 1990, from \$22.8 billion to \$26.8 billion, while imports grew 27.3%, from \$23.4 billion to \$29.8 billion in 1990, having already increased 23.8% in 1989 and 54.9% in 1988. As of August 1991, total exports for the year amounted to \$18.3 billion and imports to \$23.6 billion.

Total Mexican imports from Canada increased 24% in 1989 and decreased 1.5% in 1990. Total Canadian exports to Mexico amounted to Cdn\$594 million, while total Canadian imports from Mexico were valued at Cdn\$1,730 million in 1990. According to Mexican figures, in 1989, 1.9% of Mexico's imports came from Canada, while 1.2% of its exports were to Canada. This makes Canada Mexico's fifth largest exporter and sixth largest importer.

3. MARKET ASSESSMENT

3.1 THE TOTAL MARKET FOR COMPUTERS

The market for computers has experienced the most dynamic growth rate of all Mexican industrial product sectors in the last few years, estimated at 10% annually during the 1980s and 16% between 1986 and 1990. Imports of equipment increased 18% annually between 1987 and 1989 and 124% in 1990 with the elimination of the prior import permit on computer imports that year, dramatically above the growth of the Mexican economy as a whole, while imports of software have increased 25% between 1983 and 1990.

The total Mexican market for computers, peripherals, software and services was estimated at \$1073.3 million in 1990, up 22% from \$881.8 million in 1989 and 48% over \$723.9 million in 1988 (see Table 1). The total computer market is estimated to grow at an annual average rate of 15% in the next three years and reach approximately \$1.6 billion by 1993. Sales of hardware are expected to grow 12% per annum, software 17% and maintenance and services 18% between 1990 and 1993. As a result of the liberalization of computer imports through the elimination of the import permit requirement on hardware, imports are expected to continue increasing significantly while local production grows at smaller rates, mostly for the export market. However, it is presently still difficult to assess the changes in the market size and composition as a result of these measures. Imported hardware and equipment is expected to gain a larger share of the market with respect to domestic production. No major changes are expected in the software market as a result of these measures in

the short run, since software has never been subject to a prior import permit, however, a broader installed capacity of hardware will necessarily translate into increased software sales.

TABLE 1
THE MEXICAN MARKET FOR THE COMPUTER INDUSTRY
(millions of U.S. dollars)

	1985	1986	1987	1988	1989-	1990	1993p
Hardware	248.9	268.5	349.6	398.6	478.3	574.0	806.4
Software	80.9	98.5	115.4	147.8	172.9	204.1	326.9
Maint & Serv	103.3	120.4	125.3	177.5	230.6	295.2	485.0
TOTAL	433.1	487.4	590.3	723.9	881.8	1073.3	1618.3

Note: p=projected

Source: Dr. Ricardo Zermeño - SELECT

3.2 THE MEXICAN HARDWARE MARKET

In 1990, the total computer hardware market, including mainframes, mini and microcomputers and their peripherals, amounted to \$575.2 million, up 20% from the \$478.3 million of 1989. Of this amount, \$362.3 million, or 63%, corresponds to sales of microcomputers and their peripherals, \$96.3 million (16.7%) to minicomputers and \$116.6 (20.3%) million to mainframes (see Table 2).

TABLE 2
THE MEXICAN MARKET FOR COMPUTERS
(millions of U.S. dollars)

CATEGORY	1985	1986	1987	1988	1989	1990	1993p
Microcomputers	76.4	101.5	135.3	198.1	281.9	362.3	554.0
Minicomputers	78.7	84.9	95.4	89.3	87.8	96.3	114.5
Mainframes	93.8	82.1	118.9	111.2	108.6	116.6	137.9
TOTAL	248.9	268.5	349.6	398.6	478.3	575.2	806.4

Note: p=projected

Source: Based on data by SELECT

The total installed base of computers in Mexico, based on a rough estimate, is of approximately 670 mainframes, 6,500 minicomputers, while microcomputers are expected to reach one million in 1991. There is a clear tendency towards IBM and compatible equipment and away from other PCs and home computers. The use of 8088/8086 PCs is still common in Mexico, but with a

strong tendency to decrease. On the other hand there is an increased use of 286, 286sx, 386 and 486, as well as laptops and notebooks. There is also a high demand for PC networks and workstations, particularly among the more sophisticated end users, including industry and financial institutions. An important trend in the computer market seems to be toward multiuser equipments instead of strictly personal units. The latter will increasingly be used as intelligent workstations connected to mainframes. In general, it can be said that the Mexican market is moving towards a more mature market demanding more and better products and state of the art technology and services.

The Mexican computer industry generated a total production of computers and related peripherals for a value of \$358.3 million in 1990, down from \$617.2 million in 1989 as a result of decreased exports and the growth in imports, which has turned some manufacturers into distributors of imported products (see Table 3). The domestic computer industry had grown at an average annual rate of 47% between 1983 and 1989 to cover both internal demand and exports. The level of employment in the domestic computer industry has grown from 2,750 to 10,500 between 1983 and 1989, including both blue and white collar workers. Eighty percent of the manufacturers registered with SECOFI were oriented to the production of peripherals and microcomputers. Of the remaining twenty percent, eleven firms were large corporations manufacturing minicomputers as well as other types of equipment.

The Mexican computer industry is increasingly oriented towards foreign markets. Exports increased from \$24.7 million in 1983, at an annual rate of 55%, to \$325.6 million in 1989, and then experienced a 38% decrease in 1990 as a result of the changes in the regulations for the industry. Exports represented 56% of total local production. Local production satisfied 27% of total apparent consumption of hardware in 1990, down from 61% in 1989 due to a significant increase in the import market share. By 1993, the participation of domestic production in total apparent consumption is expected to increase slightly, to 30% as the market stabilizes again. Many companies will not be able to compete with imported products and will probably have to close their production lines. The large multinational companies and the strongly established local ones will continue to manufacture in Mexico both to satisfy local production and to export competitively. The decree for tax incentives and manufacturing criteria published in April 1990, favors products with a high national value added, low production costs and competitive advantages over plants in other countries.

TABLE 3
APPARENT CONSUMPTION OF HARDWARE IN MEX1
(millions of U.S. dollars)

	1985	1986	1987	1988	1989	1990	1993p
Production	171.1	251.8	392.5	543.9	617.2	358.3	581.0
Imports	157.2	116.6	143.6	182.9	186.7	418.1	564.8
Exports	79.4	99.9	186.5	328.2	325.6	202.4	339.4
TOTAL	248.9	268.5	349.6	398.6	478.3	574.0	806.4

Note: p=projected

Source: Based on data by SECOFI

Imports satisfied 73% of the total Mexican hardware market in 1990. The U.S. is by far the most important supplier to Mexico of computers and related equipment and holds a market share of 80% on imports of computer systems and peripheral equipment and 83% on software. This is a result of several factors: the fact that most of the authorized manufacturers in Mexico are associated with a U.S. company, and also due to the proximity of both countries, which allows timely delivery and prompt service.

The future trends in the computer market are towards products capable of exchanging information, of processing information in conjunction with other brands and of running the same programs. This means compatibility, communication and connectability between different types of equipment in order to create major computer networks within organizations. The development in fourth generation languages, relational data bases, in electronic technology and microcomputer networks have made this possible.

Principal Hardware Suppliers

In accordance with the Plan for Industrial Development, the government had registered a total of 61 companies to produce computers and related equipment in Mexico in 1989. Of these, 30 manufacture microcomputers, 10 minicomputers, 12 printers, 17 terminals and monitors, 11 modems and multiplexers and 14 other items. According to SECOFI, 61% of these companies are 100% national, 25% are joint ventures and 14% are 100% foreign owned.

The leading suppliers of mainframes in Mexico are:

International Business Machines (IBM),
Unisys (resulting from the union of Burroughs and Sperry),
Control Data Corporation (CDC),
Honeywell and
National Cash Register (NCR).

The most important suppliers of the Mexican market of minicomputers are:

IBM
Hewlett Packard (HP)
NCR
Digital Equipment Corporation (DEC)
Altos
Honeywell Bull
Unisys
Control Data
Wang
Mai de Mexico
Infosistemas (AT&T)
Data General
Tandem

In the sector of microcomputers, the following companies, listed by their 1988 market share, as published by Microsoft, have the lead:

	Market Share
Printaform	35.3%
IBM	13.1%
Elektra	10.1%
Hewlett Packard	6.5%
Indecom	4.0%
Micrológica Aplicada	3.6%
Unisys	3.5%
Televideo	3.3%
Electron	3.0%
NCR	3.0%
Intelecsis	2.7%
Olivetti	2.0%
Wyse	2.0%
Others	7.7%

Others includes brands such as:

Alpha Micro
Altos
Apple
Atari
ATT (Infosistemas)
Cromenco
Denki Corona
Digita Victor
Onyx
Radio Shack (incl. Tandy)
Sigma Commodore
Standard
Wind

New imported brands that entered (or re-entered) the market in 1990 include:

ALR
Apple
ATT
Compaq
CompuAdd
Dell
Hyundai

3.3 THE MEXICAN SOFTWARE MARKET

Between 1984 and 1990, software sales have increased at an average annual rate of 23%. Based on trade interviews and own research, the purchases of computer software in Mexico were estimated at \$147.8 million in 1988, \$172.9 million in 1989, and \$204.1 million in 1990, covering total direct sales through legitimate channels. This market is projected to grow at an average annual rate of 17% per year and reach \$326.9 million by 1993. Of the total software market, presently approximately 53% is for microcomputers, 30% for minicomputers and for 17% for mainframes. The tendency is towards an increased demand for microcomputer software, in particular standardized microcomputer software for IBM and compatible PC's, while customized software, tailored to each end user's needs, will continue to be particularly important for mainframes. It is estimated that software sales for microcomputers will grow at an estimated annual rate of 25% in the next three years, while those of software for minicomputers and for mainframes at 8%.

Total imported of software represents an estimated 70% of total apparent consumption of software, amounting to \$143 million of total sales. Official import data, however, only reflect software imports of \$35 million for 1990, as compared to \$11.1 million in 1990. The appropriate classification for software was only recently created and exclusively refers to complete software packages, including diskettes and user manuals. Some software imports are still made through recorded magnetic disks or tape, while all manuals are imported as printed matter. These imports are estimated at an additional \$12 million in 1989. Additionally, most software is imported by the manufacturers themselves or by large software houses through a master tape or disk, which is then locally reproduced and packaged under technology transfer agreements. These practices are registered with SECOFI and are subject to copyright charges equivalent to approximately 50% of the wholesale price charged by the manufacturers to their distributors.

The most important foreign suppliers of software to Mexico are the United States with an import market share of 83%. Other suppliers are West Germany, the United Kingdom, France, Japan,

Sweden, Italy and Canada. Official Canadian exports of computer disks and tape to Mexico amounted to Cdn\$69,000 in 1988 and increased to Cdn\$73,000 in 1989 and Cdn\$72,000 in 1990. Of the latter, Cdn\$30,000 corresponded to unrecorded magnetic tape, while Cdn\$42,000 were of recorded tape. On the other hand, Canadian imports from Mexico increased from Cdn\$861,000 million in 1989 to 1.5 million in 1990. Imports of unrecorded magnetic tape grew from Cdn\$697,000 million to Cdn\$1.4 million, and those of recorded tape decreased from Cdn\$164,000 to Cdn\$55,000. According to official Mexican data, Mexican imports of Canadian software were \$320,731 in 1990, representing a 0.9% market share, as compared to \$72,382 in 1989.

It is estimated that approximately 50% of total apparent consumption of software is at present clandestinely imported and reproduced. In the area of microcomputer software, this practice is particularly detrimental, since it is estimated that there are an average five illegal copies to each legal copy purchased. There are basically three sources of illegal copies. One is a group of firms that copy the software and sell the full software package, including the manuals, under their original brand name. The second stems from hardware distributors who copy a series of software programs on the hard disk of the equipment sold. Finally, it is common for firms to purchase one software package legally and to install it on all microcomputers within the firm. These practices are expected to diminish in the future as a result of a recent law project placing much higher penalties on transgressors and stricter enforcement of intellectual property rights. This project, as well as a major promotion and legal effort, is being supported and undertaken by the National Association for the Industry of Computer Program (Asociación Nacional de la Industria de Programas para Computadora ANIPCO). Also, software so acquired is not tax deductible, it does not benefit from any technical support and service, the product is not guaranteed and the buyer has no access to courses, magazines and other benefits offered to software companies' customers.

The domestic generation of software started approximately eight to ten years ago. It is done by computer manufacturers and independent houses. Local software houses are developing local packages designed in Spanish for the Mexican market. They are gradually increasing their market penetration and reducing the dependence on foreign imports. Software produced locally consists mostly of off-the-shelf products for microcomputers and of customized software for mainframes and minicomputers. Additional software for minicomputers and mainframes is mostly of imported origin. Mexico is exporting software to Central and South America, as well as to the United States and Canada.

The ANIPCO has been supporting the local industry through its six areas: Technology, which promotes the use of state-of-the-art technology; Promotion, in charge of helping obtain financing from Nafinsa and Bancomext, two local development banks, and securing government tenders, among other activities; Pirating Practices,

which fights for the stricter enforcement of intellectual property rights and undertakes campaigns to reduce software pirating; Events, which organizes technical seminars, conferences, participation in trade exhibitions, and has set up an annual prize for local software developers; Information, which publishes a monthly bulletin for the associates; and Membership, which is in charge of recruiting new members.

There are approximately 100 registered software companies, most of which are located in Mexico City. As the market grows in size and becomes more sophisticated, the tendency will be towards concentration into a limited number of strong firms with a proven background, a solid base and presence in Mexico, capable of providing service and support. At present, there are five groups of software distributors: local or independent software developing companies, which offer domestically developed finished products; representatives of foreign software companies, offering finished products manufactured abroad; multifunction companies, that offer several software-related products, such as their own products, imported software, customized products and services; software houses which develop special applications software and services; and hardware manufacturers, which sell software for their specific equipments.

As computer equipment is becoming more of a commodity, software is becoming the principal sales feature in a computer system since it allows suppliers to differentiate their product and users to obtain maximum efficiency from their hardware. At present, software represents 40% of hardware sales. Within five years from now, software is projected to represent close to 50% of hardware sales. Demand for software is becoming increasingly specialized and end users are more educated and ask for better tools to satisfy their requirements. Software sales are also expected to grow at a faster pace than hardware sales as a result of the relative increase of software prices compared to hardware and because software does not only apply to new equipment sold but also to hardware sold in the past, which is constantly being upgraded. At the same time, companies are trying to better utilize existing hardware, increasing its productivity through improved and updated software, as well as through customized software specially designed for that company's needs. The trend in the software market is towards user friendliness, enhanced communications and integration, utilizing fourth generation languages and relational data bases. Software development is being performed increasingly by companies dedicated to designing and developing software, rather than by computer centers, and will be sold as off-the-shelf systems and packaged products.

The Mexican software market is still relatively immature. The applications of software more commonly used in Mexico are still the basic general business applications, word processing, data base and spreadsheet applications. Together with operating systems, they account for 73% of total sales. Customized software represents another 13%, while other applications account

for the rest, including utilities, communications, integrated applications, graphics, education, recreational and other specialized applications software.

According to a poll published by Computerworld Mexico, the most common applications of software for PCs, measured by the percentage of companies using them, are as follows: spread sheets (97%), word processing (93%), data base management systems (87%), micro-macro communications (77%), business graph design (72%), financial analysis models (67%), accounting (65%), project design (54%), local networks (42%), window management (37%), statistical and scientific applications (36%), inventory control (30%), CAD/CAM (29%), desktop publishing (27%) and electronic mail (27%).

Approximately two thirds of total software sales are made by the computer manufacturers themselves or through their authorized distributors. It is estimated that software sales by the manufacturers represent approximately 20% of their hardware sales. The remaining 35% is sold through software houses. In the area of microcomputer software, approximately 50% of sales are made through software houses. Five manufacturers (IBM, Unisys, NCR, Hewlett Packard and Sigma Commodore) account for approximately 40% of total software sales by manufacturers and over 20% of total sales. The most important computer manufacturers are the following:

- IBM
- Unisys
- Hewlett Packard
- NCR
- Sigma Commodore
- Digital Equipment Corp.
- Honeywell Bull
- Control Data
- Tandem
- Micrológica Aplicada
- Mai de México
- Infosistemas
- Cromex

The most important software houses are:

Software A.G. de México	(A.G. Software)
Siga Desarrollo	(Ashton Tate)
Microsoft Corp.	(Microsoft)
Sistemas Integrales de	(Cullinet)
Cómputo	(Applied Data Research)
Execuplan	(Lotus)
Apemex	(Borland)
Softron	(McCormack & Dodge)
Datanet Sistemas	
Grupo Tea	
Computer Associates	

Micro Negoplan
Kuazar
Opi de México
Equipos y Procesos Interactivos
Cincom
Power House
Televideo
Oracle

Other local software companies that have off-the-shelf products and compete in the open market, include:

Apoyo Computacional
Artes Electrónicas
Comper
Corporación Mexicana de Consultoría
Electrónica Administrativa
Fralc
Infosistemas Financieros
Multisistemas Modulares de Cómputo
Negoplan
Proinsa
Redcom

4. END USERS

The most important end users of software by sector are government institutions (20%), including state and federal administration and government owned companies; financial and insurance services (19%), including banks, exchange and stock houses, insurance and guarantee companies; retailing and wholesaling establishments (17%), manufacturing establishments (14%), such as mining, metal working, breweries, construction, manufacturing, chemicals, automotive, etc; computer manufacturers (5%); utilities (4%), including telephone, electricity and telegraph; health care services, education, research, transportation and communication, in addition to professionals (13%) such as accountants, management and engineering consultants, consumers, attorneys and doctors.

It is estimated that the public sector (including federal and state government agencies, parastate companies, banks and public educational institutions) demands approximately 60% of mainframes, 75% of minicomputers and 64% of microcomputers sold in Mexico. The government is therefore also by far the largest single user of software in Mexico, through its direct administrative area, government entities and some 425 state owned companies.

The number of government computer centers totals 1,100 throughout the country, with computer installations at each central location. Government purchases of computers and software have to be approved by the National Institute for Geography, Statistics

and Computers (Instituto Nacional de Geografía, Estadística e Informática INEGI). Several recent changes have made government procurement more flexible, allowing each unit to make independent decisions. This translated into larger and faster sales to government entities, making this sector the fastest growing sector during 1990.

Total authorized expenses to the public administration by sector were as follows between 1984 and 1988 in million dollars:

	1984	1985	1986	1987	1988
Banks	50.0	56.6	81.5	199.8	183.9
Central	44.7	25.3	15.1	24.5	54.3
Parastate	35.4	34.4	50.6	100.3	63.3
TOTAL	130.1	116.3	147.2	324.6	301.5

Source: INEGI-DGPI

Approximately 9% of total computer expenses are in software, while the remainder corresponds to hardware purchases or rentals.

The most important government agencies using computers are the various secretariats or ministries, which together employ some 1.5 million people. They include the following entities, listed in order of importance of their annual computer purchases. Ministry of Finance (SHCP), the fiscal regulating agency; the Ministry of Mines and Parastatal Industry (SEMIP); the Department of Mexico City (DDF); the Ministry of Communications and Transportation (SCT); the Health Ministry (SS); the Ministry of Commerce and Industrial Development (SECOFI); the Ministry of Programming and Budget (SPP), the agency responsible for supervising the government expenses and their assignment, as well as the information gathering and data publishing agency for the government; the Ministry of Agriculture and Hydraulic Resources (SARH); the Ministry of Education (SEP); the Ministry of Labor and Social Foresight (STPS); the Ministry of Fishing (SP); the Ministry of the Interior (SG); the Ministry of External Relations (SRE); the Ministry of Tourism (SECTUR); the Ministry of Ecology and Urban Development (SEDUE); the Justice Department and the Secretariat of Defense. All of these agencies use mainframes for mass information storage and also mini and/or microcomputers for individual operations. State governments are also increasingly using computers and represent a largely untapped market.

The second largest sector of the economy demanding software is the national banking system together with other financial services such as stock brokers, currency exchange houses, guarantee and insurance companies. In 1982 all banks were nationalized and are regulated through the Central Bank (Banco de México) in overall policy, foreign currency exchange rates and monetary policy. Nevertheless, they continue to operate as

independent commercial units and make their own decisions regarding publicity and equipment purchases. In 1991 nationalization process began to be reversed and several have now been privatized and others are in the process of being sold again to private investors.

There are approximately 20 banks operating in Mexico, the most important of which are Banco Nacional de México (Banamex) and Banco de Comercio (Bancomer). Banamex has 75 branches throughout the country. Banamex has ten mainframes as its core equipment in addition to over 50 minicomputers and some 10,000 terminals connected 'on line' to the system. Bancomer uses forty IBM 43/81 and one 30/90 computers. Banca Serfin uses two 30/90 and is the first bank in Mexico to install an automatized branch in Mexico City; Multibanco Comermex uses IBM 43/81 and Banco del Atlántico two Burroughs A-10 central equipment. All of the above banks additionally use microcomputers. Other banks include Nacional Financiera (Nafinsa), Banco Mexicano Somex, Banca Confía, Banco Mexicano, Bancreser and Banpaís. Additionally, the insurance and bonding service companies are highly computerized.

Banks use mainframes for the massive storage of their information on customer accounts as well as data on general administration, accounting and control. Primary computer applications include control, feasibility studies, billing and account preparation, payrolls, personnel management and other applications. Additionally, the branches and regional offices of the more sophisticated banks and stock houses have terminals connected to the central CPU for immediate customer information and simultaneous transactions. They are also creating information networks to connect their regional operations to the central administration and to distribute information to multiple users connected via terminals at different locations. The two largest banks are electronically connected to the large supermarket chains to authorize card purchases. Banks will tend to use more microcomputers at the executive level for administration as well as monitors and printers for terminals in order to make operations more efficient.

Commercial activities account for 23% of Mexico's Gross Domestic Product. Major retailing and wholesaling establishments are concentrated in Mexico City and 250,000 in the rest of the country employing 6.5 million people. The modernization of commercial services will include the computerization of operations as well as the computerized tracking of credit and billings. Large commercial establishments, such as Comercial Gigante, Comercial Mexicana, Palacio de Hierro and Liverpool, already use minicomputers and mainframes for checkout registers linked to a central CPU, inventory control, credit sales and other accounting purposes, and are moving towards a point of sale registration which will

identify the item sold, sales volume, inventory position and profit. Smaller businesses will tend to use mini and microcomputers for payroll, taxes, payables and receivables, payments and inventory control.

Manufacturing establishments, numbering some 195,000 and employing some three million workers, account for 25% of Mexico's GDP. Mexico's industry is based on small and medium sized firms with an average employment of 31 persons per company. Some 85% of manufacturing firms employ 16 or less persons, 12% have 16-100 employees, while only 3% have over 100 people. Only the latter segment has large computer installations, mostly based on minicomputers or PC networks. The manufacturing sector, however, is among the more sophisticated users of microcomputers, purchasing 80286 and 80386 systems rather than 8088/8086.

Small and medium sized companies, which represent the greatest potential market in Mexico, tend to use microcomputers, mostly for control, administration, inventory control, payrolls and accounting. The most important use of computers in the large companies, besides control and accounting, is for productivity improvement. In addition, computers are increasingly being used in industry within the manufacturing process, to plan and control.

The most important state-owned manufacturing firm is Petroleos Mexicanos (PEMEX), the national petroleum and gas monopoly, which continues to expand its data processing activities. In 1987 it spent some \$11 million in software. PEMEX uses basically UNIX compatible mainframes for the mass storage of information, both in its administrative and production areas, and is moving towards greater purchases of mini and microcomputers for internal control. PEMEX develops many of its specialized applications internally, while it purchases standardized products for business applications and other general uses.

Utilities are basically controlled by the federal government. The most important companies are:

- The Federal Electricity Commission (CFE), which controls, generates and distributes all electrical energy in Mexico, and the Institute for Electrical Research (IIE) use mainframes to store mass information and mini and microcomputers to operate and link their 700 operations throughout the country. They presently have eight mainframes, 50 minicomputers, 55 multiuser micros and over 200 PC's. Software applications used by CFE range from general business applications (accounting, payroll, inventories, etc) to construction control, analysis of distribution systems, engineering applications, structural analysis, safety and CAD/CAM;
- The Mexican communications system, including telephone, telegraph, telex and fax, radio and TV broadcasting and postal service, is regulated by the Secretariat for Communications and

Transportation. (Secretaría de Comunicaciones y Transportes - SCT). Teléfonos de México, the centralized telephone system which was recently sold to a group of local and foreign private investors, provides service to all areas of the country with 11 million telephones installed. The privatization of Telmex will translate into increased and modernized services through the purchase and installation of high technology products. It uses mostly mainframes and micros for the control of lines and to bill its customers, as well as for general administrative purposes.

Telecomunicaciones de México, through the national telegraph company, has over 2,600 offices in operation and employs 14,000 people. In 1990, it transmitted 25 million telegrams and 9 million payment orders. The postal service has 7,500 offices and employs 32,000 people. In 1990 it handled over one billion items, however, it is only in the first stages of automation. Computers are still used basically for general accounting and administrative tasks. There are 600 television stations throughout Mexico, in addition to over 1,000 radio stations, both privately and government owned;

- The Mexican public transportation system, including motor vehicles, subway, air transportation, railroads and maritime transportation is also regulated by SCT. Computer applications are used in all these areas for reservation services, inventory control, traffic and vehicle control, freight movements, invoicing, personnel management, payrolls and general accounting;

Government health institutions, including the Mexican Institute for Social Security (Instituto Mexicano del Seguro Social IMSS), the Health Institute for Safety and Social Services for State Workers (Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado ISSSTE), the Secretariat of Public Health, PEMEX, the Army and Navy together supply medical services to some 45 million people in their 1,600 hospitals and 9,000 consulting offices for out-patients. Additionally, there are some 25,000 doctors in private practice. IMSS and ISSSTE have an elaborate computer network throughout the country to register and bill their members and associates, register medical histories, for inventory control of fixed assets, equipment and medicines, general accounting, payroll, accounts payable and receivable.

The Mexican educational system, ranging from pre-school to post graduate studies, covers over 30 million pupils and students. Computers are beginning to form an integral part of the educational system, particularly at the university level, to conduct important research programs in all areas of education, to train and teach students and to record students enrolled, their grades, material purchases, payrolls, etc.. Total enrollment at the university level can be divided into the following study areas: social and administrative sciences 43%, engineering and technology 28%, medicine 14%, agricultural sciences 9%, education

and arts 3% and natural and exact sciences 3%. The National University (Universidad Nacional Autónoma de México UNAM), the Politechnic Institute (Instituto Politécnico Nacional IPN) and the Metropolitan University (Univesidad Autónoma Metropolitana UAM) are the most important state universities. The IPN, with 60,000 students, has two mainframes and several minicomputers. The UNAM, with an enrollment of 160,000, has five mainframes and hundreds of microcomputers used for scientific/research projects, administration and numerical calculations and CAD/CAM projects. IBM has made several agreements with universities and schools in order to develop applied research projects. One of these is the REDUNAM, a network created to cover the university's requirements in the areas of engineering, research, physics, astronomy, biotechnology, mathematics and computer sciences. Private universities have a total enrollment of 170,000 students. Among the largest and technologically best equipped are the Monterrey Technical Institute, the Anáhuac, Iberoamericana and La Salle universities. There are also a myriad of computer schools in Mexico imparting courses in programming, software and computer sciences.

The National Science and Technology Council (Consejo Nacional de Ciencia y Tecnología CONACYT) is the most important government research institution in Mexico, where most of the country's basic scientific research is conducted. It also has a major information bank connected to several international data banks and information services making vast amounts of scientific, technological and engineering data available to the private and public sectors in Mexico. It has large computer installations to which its 20 district offices are connected. CONACYT uses several mainframes and minicomputers with some 350 terminals in its service and information centers, as well as microcomputers. It is connected to TELEPAC and 14 national and international computer centers and data banks.

Other potential buyers are private health care and educational institutions, scientific and laboratory research facilities, publishing companies, travel agencies, hotels and tourism related businesses. The Camino Real hotels in Mexico, for example, uses one IBM S/1 and two S/36 computer systems in addition to NCR equipment and microcomputers for the general hotel administration, customer billing and room control. All of the above sectors will progressively move towards an increased use of computers to better control their operations and to be more efficient.

Finally, many professionals purchase computers for their private use and are increasingly using standardized software applications for PC's. These professionals include some 100,000 registered doctors, in addition to approximately 200 assistants, laboratory technicians and other professionals within the medical field. Doctors are mostly using computers in hospitals, laboratories and private offices for medical records of patients, fees, appointments and fiscal and financial controls. They are using

administration software, applications software and some customized products. There are an estimated 175,000 registered attorneys working in law offices, in industry, commerce, government agencies, in private practice or specialized activities. Their most commonly used applications are word processing, general business and customized software. Accountants (approximately 450,000) are the most familiar with computers and use them the most, for all applications related to accounting -administration, forecasting and planning, inventory and production control, sales, personnel and payrolls, financial applications among the most important. Management & engineering consultants are the second largest professional users of computers in Mexico. They use a variety of applications, including data base, construction, accounting, graphics, critical path, CAD, budget control, word processing and utility software. Other professionals include some 50,000 computer technicians, teachers, bankers, salesmen, writers, architects and agronomists.

Home consumers also represent an increasing market for microcomputers. Students at the university level are increasingly purchasing personal computers and school age children are already beginning to use computers for their homework, but mostly for games.

5. MARKET ACCESS

Software for mainframes is usually imported by the major manufacturers or designed locally. Software houses both import and offer custom made products and may also sell packages provided by the manufacturers on a commission basis. Software for minicomputers is imported by the manufacturers themselves or by software houses and sold directly to their customers. Microcomputer software is mostly sold through software houses and shops and through microcomputer distributors. Some of the marketing tools most commonly used in Mexico are technical seminars, exhibitions, demonstrations of the equipment and massive publicity.

As a result of Mexico's accession to GATT, the Mexican government has gradually opened the economy to international markets. Tariffs have been lowered from a maximum 100% in 1983, to 20% since December, 1988. The official price system has been totally eliminated and import permits are required on only 198 of the total 11,812 items in the Mexican Harmonized Tariff System.

Software and unrecorded magnetic tape and disks are classified under the Harmonized Tariff Schedule numbers 85.23 and 85.24. Imports of software are subject to a 10% to 15% ad valorem duty assessed on the F.O.B. invoice value. In addition, a 0.8% customs processing fee is assessed on the invoice value. A 10% value added tax (recently reduced from 15%) is then assessed on the cumulative value of both taxes in addition to the invoice value.

Formerly, in order to bid on tenders and sell to a government agency or decentralized company, foreign manufacturers required having a local resident agent and to have the foreign supplier registered and accepted by the Secretariat of Planning and Budgeting (Secretaría de Programación y Presupuesto - SPP). As of July 1991, the above requirement for prior registration with SPP has been eliminated.

The new procedures now in force require the foreign supplier to have a local agent or representative and it has to be registered through his local representative as an accepted supplier with each government ministry and/or decentralized agency according to the international tender requirements under review.

International tenders financed by the World Bank or the International Development Bank are open to all member countries of these institutions. More recently, the World Bank, where its credits are involved, has required that bid documents should also include an affidavit confirming that the Canadian company is a bona fide Canadian company with an official residence in Canada and that Canada is recognized as a contributing member to the World Bank.

There are no official metric requirements applicable to imports into Mexico. However, since the metric system of units is, by law, the official standard of weights and measures in Mexico, importers will usually require metric labeling for packaged goods, although the English system is also used. Dual labeling is acceptable. Imported products should be labeled in Spanish containing the following information: name of the product, trade name and address of the manufacturer, net contents, serial number of equipment, date of manufacture, electrical specifications, precautionary information on dangerous products, instructions for use, handling and/or product conservation and mandatory standards. Mexico adheres to the International System of Units (SI). Electric power is 60 cycles with normal voltage being 110, 220 and 400. Three phase and single phase 230 volt current is also available.

Prepared by:
Caroline Vérut for the
Canadian Embassy
Mexico City
April 1990
Updated December 1991

Exports

852320 unrecorded mag. disks	22	28
852423 recorded mag. tapes	3	3
total	25	31

Imports

computer tape	7,533	19,414		
magnetic tape	2,962	16,541		
unrecorded -4mm			3	163
4-6.5 mm			269	354
+ 6.5 mm				23
disks				697
total unrecorded			272	1,237
recorded			11	189
			50	28
			2	7
total recorded			63	224
total	10,495	35,955	335	1,461

To call all telephone and fax numbers listed below from Canada, unless they are preceded by a different area code, dial 011-525 first, otherwise dial 011-52-(area) number.

NOTE: The information on companies not located in Mexico City was not confirmed.

**APPENDIX I:
INDUSTRIAL CHAMBERS AND ASSOCIATIONS**

**ASOCIACION MEXICANA DE INGENIEROS EN
COMUNICACION ELECTRICA Y ELECTRONICA (AMICEE)*
ELECTRIC AND ELECTRONIC COMMUNICATIONS ENGINEERS**

Balderas 94

Col. Centro

06070 México D.F.

Phone: 512-53-00 510-31-42

Fax: 510-3142

Contact Ing. Diódoro Guerra Rodríguez
Presidente

**ASOCIACION NACIONAL DE IMPORTADORES Y EXPORTADORES
DE LA REPUBLICA MEXICANA (ANIERM)
IMPORTERS AND EXPORTERS ASSOCIATION**

Monterrey 130

Col. Roma

06700 México D.F.

Phone: 564-86-18 584-95-22

Fax: 584-53-17

Contact: Sr. Ernersto Warnholtz
Presidente

**CAMARA NACIONAL DE LA INDUSTRIA
ELECTRONICA Y DE COMUNICACIONES
ELECTRICAS (CANIECE)
ELECTRONICS CHAMBER**

Guanajuato 65

Col. Roma

06700 México D.F.

Phone: 574-74-11

Fax: 554-80-53

Contact: C.P. Eduardo Reyes Phillips
Director General
Lic. Jorge Guevara
Economic Studies

**CAMARA NACIONAL DE LA INDUSTRIA
DE PROGRAMAS PARA COMPUTADORAS (ANIPCO)**

Insurgentes Sur 1677-204
Col. Guadalupe Inn
01020 México D.F.

Tel: 524-06-57 524-76-82
Cocontact: Ing. Sergio Ferragut Sucarichi
President

SELECT

(Strategic Services for the Electronic Industry)

Nuevo León 54-501
Col. Hipódromo Condesa
06100 México D.F.

Tel: 256-14 26 256-10-98
Fax: 553-46-41
Contact: Dr. Ricardo Zermeño
Director

**APPENDIX II:
USEFUL MEXICAN GOVERNMENT MINISTRIES
AND DECENTRALIZED AGENCIES**

TELECOMUNICACIONES DE MEXICO (SCT)

Eje Central Av. Lázaro Cárdenas 567

Col. Narvarte

03020 México D.F.

Phone: 519-91-61 519-09-08

Fax: 559-98-12

C.P. Carlos Lara Sumano

Director General

Ala Norte Piso 11

Phone: 519-40-49 530-34-92

Ing. Juan Manuel Zamudio

Subdirector de Sistemas

Satelitales

Ala Norte - Piso 9

Phone: 519-63-43 530-30-60

Ing. Carlos Hernández Ojeda

Subdirector de Sistemas de

Microondas

Ala Norte - Piso 6

Phone: 530-24-31

TELEFONOS DE MEXICO S.A. DE C.V.

Parque Vía 198

Col. Cuauhtémoc

06599 México D.F.

Phone: 222-12-12

Lic. Juan Antonio Simón

Director General

Phone: 222-12-12

Arq. Pedro Cerisola

Director de Operaciones

Phone: 222-14-96

MITEL DE MEXICO, S.A. DE C.V. (MITEL) (SCT)

Av. Oleoducto 2810

Col. Parque Industrial El Alamo

44490 Guadalajara, Jal.

Apdo. Postal: 91081

Phone: 39-75-20

Fax: 35-56-11

Sr. Peter Conlon
Director General
Phone: 39-75-20 39-74-41

Ing. Miguel Angel Romera Herrera
Director de Operaciones
Phone: 39-75-20

PETROLEOS MEXICANOS (PEMEX) (SEMIP)

Av. Marina Nacional 329
Col. Huasteca
11311 México D.F.
Phone: 250-26-11 254-20-44
Fax: 254-45-29

C.P. Francisco Rojas Gutiérrez
Director General
Torre Ejecutiva - Piso 44
Phone: 250-34-57 250-10-55

Lic. Víctor M. Montañez Morfín
Secretario Particular
Torre Ejecutiva - Piso 44
Phone: 250-34-57 250-10-55

Lic. Adrián Lajous Vargas
Subdirector de Planeación y
Coordinación
Torre Ejecutiva - Piso 36
Phone: 203-47-43 254-33-34

Ing. Alfonso Nava Jaimes
Gerente de Ingeniería de Telecomunicaciones
Phone: 531-61-90

COMISION FEDERAL DE ELECTRICIDAD (SEMIP)

Río Ródano 14
Col. Cuauhtémoc
06598 México D.F.
Phone: 553-71-33 536-64-00
Fax: 553-6424

Ing. Guillermo Guerrero Villalobos
Director General
Piso 7
Phone: 553-65-00

Ing. Andrés Moreno Fernández
Subdirector de Construcción
Piso 5
Phone: 286-69-43

Lic. Jaime Moreno Valle
Director de Productos Internacionales
Piso 1
Phone: 720-60-23 709-09-20

Ing. Mario Quijada Mendivil
Director de Sistemas
Barranca del Muerto 24 - Piso 10
Col. Guadalupe Inn
01020 México D.F.
Phone: 725-11-85 725-16-04

Ing. José Covarrubias Bravo
Director de Ingeniería de
Comunicaciones
Barranca del Muerto 24 - Piso 10 Sur
Col. Guadalupe Inn
01020 Mexico D.F.
Phone: 725-16-01 725-12-78

BANCOMER, S.A.
Av. Universidad 1200
Col. Xoco
03339 México D.F.
Phone: 534-00-34
Fax: 604-19-11
Telex: 1777629630 BCSAME

Lic. Héctor Hernández Cervantes
Director General
Piso 2
Phone: 621-33-01 621-33-02

C.P. Carlos Aguilar Villalobos
Director General Adjunto de
Finanzas y Apoyos Bancarios
Piso 2
Phone: 534-00-34 ext: 3388

Departamento de Telecomunicaciones
Phone: 621-65-20

NACIONAL FINANCIERA S.N.C. (SHCP)
Av. Insurgentes Sur 1971
Col. Guadalupe Inn
01020 México D.F.
Phone: 550-69-11

Lic. Oscar Espinosa Villareal
Director General
Torre 4r - Piso 13
Phone: 550-16-16 550-17-16 325-67-01
Fax: 550-31-32

Lic. Guillermo Guzmán González
Secretario Particular
Torre 4 - Piso 13
Phone: 550-37-66 550-59-70

Lic. Héctor Arangua Moral
Director Adjunto de Promoción y
Financiamiento
Torre 4 - Piso 13
Phone: 550-48-30 325-67-22

Lic. Gustavo Valdés Rojas
Jefe de la Unidad de Telecomunicaciones
Torre 3 - Piso 4
Phone: 325-62-00

CONSEJO NACIONAL DE CIENCIA Y TECNOLOGIA (CONACYT) (SPP)

Circuito Cultural Universitario
Edificio Conacyt
Col. Cd. Universitaria
04515 México D.F.
Apdo. Postal: 20-003
Phone: 665-11-77 655-32-77
Fax: 655-39-06
Telex: 017-74-521

Dr. Fausto Alzati Araiza
Director General
Edificio A - Piso 3
Phone: 665-40-43 665-47-93

Lic. Luis F. Basteris Canton
Director Adjunto de Modernización Tecnológica
Edificio B - Piso 1
Phone: 665-11-77 ext. 3461

Act. Alfredo Phillips Grenne
Director de Asuntos Internacionales
Edificio A - Piso 2
Phone: 665-24-11 ext 2621

Ing. Sergio Flores Flores
Director del Centro de Cómputo
y Telecomunicaciones
Edificio A - Piso 1
Phone: 665-11-77 ext 1681

Lic. José Luis García
Gerente de Abastecimientos
(Responsable de Adquisiciones)
Piso 7
Phone: 286-95-36 286-9556

COMPañIA DE LUZ Y FUERZA DEL CENTRO, S.A. (CFE) (SEMIP)
Melchor Ocampo 171
Col. Tlaxpana
11379 México D.F.
Phone: 518-00-80 hasta el 99
Fax: 591-10-11

Ing. Guillermo Guerrero Villalobos
Director General
Río Ródano 14 Piso 7
Col. Cuauhtémoc
06598 México D.F.
Phone: 553-64-00 553-65-00

Ing. Jorge Gutiérrez Vera
Subdirector General - Piso 8
Melchor Ocampo 171
Col. Tlaxpana
11379 México D.F.
Phone: 546-77-70 592-42-73

Ing. Celestino Cázares Lazcano
Gerente Administrativo
(Responsable de Adquisiciones)
Melchor Ocampo 171 - Piso 8
Col. Tlaxpana
11379 México D.F.
Phone: 546-79-58

BANCO NACIONAL DE MEXICO S.A. (BANAMEX)
Isabel la Católica 44
Col. Centro
06089 México D.F.
Phone: 709-09-20

Sr. Alfredo Harphelu
Presidente
Piso 1
Phone: 709-09-20 ext. 74623

Dr. Sergio Olivera Díaz
Comité de Dirección
Piso 1
Phone: 709-09-20 ext. 74492

DEPARTAMENTO DEL DISTRITO FEDERAL

Dr. Lavista 144 Sotano
Col. Doctores
06727 México D.F.

Lic. Arturo Rodríguez Domínguez
Director General de Informática
Phone: 588-10-81

PRESIDENCIA DE LA REPUBLICA

Palacio Nacional Patio Emperatriz
Edificio 12 Piso 3
Col Centro
06067 México D.F.

Act. Julio Novoa
Coordinador de Cómputo e Informática
Phone: 522-13-57

PROCURADURIA GENERAL DE JUSTICIA DEL DISTRITO FEDERAL

Av. Coyoacán 1635 Edificio B - P.B
Col. del Valle
03100 México D.F.

Mao. El Hussein Si Magaña
Director de Sistemas de Información e Informática
Phone: 625-74-54
Fax: 625-72-57

***PROCURADURIA GENERAL DE LA REPUBLICA**

Paseo de la Reforma Nte. (Esq. Violeta) Sotano
Col. Guerrero
06300 México D.F.

Ing. Fernando Arenas Hernández
Director de Informática
Phone: 518-01-80

SECRETARIA DE AGRICULTURA Y RECURSOS HIDRAULICOS

Patriotismo 711 Ed. C. P.B
Col. Sn. Juan Mixcoac
0373 México D.F.

Ing. Mario A. Berlanga Ochoa
Director de Area de Informática
Phone: 563-28-50

SECRETARIA DE COMERCIO Y FOMENTO INDUSTRIAL

Alfonso Reyes 30 - Piso 5
Col. Hipodromo Condesa
06179 México D.F.

Act. Angel Domingo Ramírez Castillo
Director General de Planeación e Informática
Phone: 286-00-80- 211-00-36

SECRETARIA DE COMUNICACIONES Y TRANSPORTES

Av. Sn. Francisco 1626 - Piso 7
Col. del Valle
03100 México D.F.

Ing. Francisco J. Jauffred Mercado
Director General de Fomento de las
Telecomunicaciones e Informática
Phone: 534-19-79 534-19-44

SECRETARIA DE LA CONTRALORIA GENERAL DE LA FEDERACION

Av. Insurgentes Sur 1735
Ala norte - Mezzanine 20
Col. Guadalupe Inn
01020 México D.F.

Ing. Manuel Galván Zuart
Director de Unidad de Organización y Sistemas
Phone: 534-54-71
Fax: 524-83-06

SECRETARIA DE DESARROLLO URBANO Y ECOLOGIA

Av. Universidad 150
Col. Narvarte
03100 México D.F.

Lic. Juan José Lechuga Pineda
Director de Informática
Phone: 682-07-03 682-09-61

SECRETARIA DE EDUCACION PUBLICA

Donceles 100
Oficina 24 P.B.
Col. Centro
06029 México D.F.

Lic. Rubén Guerra Hasbun
Director General de Informática Administrativa
Phone: 512-97-74
Fax: 512-67-90

**SECRETARIA DE ENERGIA, MINAS E
INDUSTRIA PARAESTATAL**

Insurgentes Sur 552 P.B
Col. Roma Sur
06769 México D.F.

Ing. Eduardo Palestino Herrera
Director de Procesos Electrónicos
Phone: 564-97-23

SECRETARIA DE GOBERNACION

Abraham González 48 - Piso 1
Col. Juárez
06690 México D.F.

C.P. Octavio Flores Montiel
Director de Informática y Estadística
Phone: 566-81-88 ext 2399
Fax: 535-91-40

SECRETARIA DE MARINA

Eje 2 Oriente
Tramo H. Escuela Naval Militar 861
Edificio B - P.B.
Col. Los Cipreses
04830 México D.F.

Contralamirante I.M.N. Alfonso Vázquez Ramírez
Director General de Organización y Sistemas
Phone: 684-81-88 ext. 4221

SECRETARIA DE PESCA

Av. Alvaro Obregón 269 - Piso 1
Col. Roma
06709 México D.F.

Lic. José Luis Guerra Raya
Director de Sistemas y Normas
de Aprovechamiento Pesquero
Phone: 208-01-50
Fax: 207-52-50

SECRETARIA DE PROGRAMACION Y PRESUPUESTO

Héroes de Nacozari 2301 Puerta 3
Lic. Miguel Cervera Flores
Director General de Estadística e Informática
Phone: 782-10-99

SECRETARIA DE LA REFORMA AGRARIA

Calz de la Viga 1174 Piso 3
Col. El Triunfo
09430 México D.F.

Ing. Alfonso Casillas Román
Director General de la Unidad de
Documentación e Información Agraria
Phone: 650-78-64

SECRETARIA DE RELACIONES EXTERIORES

Ricardo Flores Magón 1 - Piso 3
Col. Guerrero
06995 México D.F.

Ing. Héctor Rebollo Pinal
Director de Informática
Phone: 782-41-44 ext. 3153
Fax: 782-34-41

SECRETARIA DE TURISMO

Av. Presidente Masaryk 172 - P.B.
Col. Bosques de Chapultepec
11587 México D.F.

Fis. Alejandro Nava Alatorre
Director de Informática
Phone: 545-38-20
Fax: 250-86-10

SECRETARIA DE LA REPUBLICA ARGENTINA
Calle de la Viga 1174 Piso 3
Col. El Triunfo
06130 Mexico D.F.

SECRETARIA DE ENERGIA, MINAS Y
INDUSTRIAS
Calle de la Viga 1174 Piso 3
Col. El Triunfo
06130 Mexico D.F.

Ing. Alfonso Castiella Román
Director General de la Unidad de
Documentación e Información Agraria
Phone: 520-78-64

Ing. Eduardo Palencia Herrera
Director de Procesos Electrónicos
Phone: 562-97-66

SECRETARIA DE RELACIONES EXTERIORES
Ricardo Flores Magón 1 - Piso 3
Col. Guerrero
06220 Mexico D.F.

SECRETARIA DE ECONOMIA
Calle de la Viga 1174 Piso 3
Col. El Triunfo
06130 Mexico D.F.

Ing. Hector Emilio Pinal
Director de Informática
Phone: 751-41-44 ext. 3123
Fax: 751-34-41

SECRETARIA DE DEFENSA
Calle de la Viga 1174 Piso 3
Col. El Triunfo
06130 Mexico D.F.

SECRETARIA DE TURISMO
Av. Presidente Masarik 172 - P.B.
Col. Bosques de Chapultepec
11567 Mexico D.F.

SECRETARIA DE HABITACION
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Calle de Sagorari 261 Puerta 3
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Director General de Estadística e Informática
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**APPENDIX III:
COMPUTER EQUIPMENT DISTRIBUTORS AND AGENTS**

BULL HN SISTEMAS DE INFORMACION, S.A. DE C.V.

Hamburgo 64
Col. Juárez
06600 México D.F.
Phone: 208-01-77
Fax: 207-88-38
Contact: Ing. Agustín Dorantes
Director General

CAD-CAM, S.A. DE C.V.

Insurgentes Sur 421, Edificio B, Desp. 604
Col. Roma
06100 México D.F.
Phone: 264-22-27
Fax: 264-29-47
Contact: Ing. Morrris Behar
Director General

CADESI S.A. DE C.V.

Manuel Gamio 654
Col. Sinatel
08000 México D.F.
Phone: 539-24-24
Fax: 532-78-58
Contact: Ing. Miguel Parrao López
Director General

CALCOMP, S.A. DE C.V.

Platero 7
Col. Sn. José Insurgenes
03900 México D.F.
Phone: 660-10-78 660-23-90
Fax: 660-23-90
Contact: Ing. Fernando González Maine
Director General

COELSA, S.A. DE C.V.

Viveros de Atizapán 1
Col. Viveros de la Loma
54080 Tlalnepantla, Mex.
Phone: 398-71-93
Fax: 398-83-46
Contact: Lic. Horacio Duhart
Director General

COMPURED DE VERACRUZ, S.A. DE C.V.
Av. 20 de Noviembre 1920
91910 Veracruz, Ver.
Phone: (29) 35-33-55
Fax: (29) 35-00-66
Contact: Ing. Gregorio Kachadourian
Director General

**CONSULTORIA Y SERVICIO PARA
LA INFORMATICA, S.A. DE C.V.**
Francisco Rojas González 142
Col. Prado Ermita
03590 México D.F.
Phone: 539-08-67
Fax: 532-53-21
Contact: Lic. Ma. del Carmen Sánchez
Directora General

CORPORACION MICROGRAFICA, S.A. DE C.V.
Pestalozzi 927
Col. del Valle
03100 México D.F.
Phone: 687-59-71 687-59-88
Fax: 523-55-08
Contact: Juan López Malagón
Director General

DATA CARD DE MEXICO, S.A. DE C.V.
Av. Cuauhtémoc 1486-601 A
Col. Sta. Cruz Atoyac
03310 México D.F.
Phone: 688-98-48 688-96-28
Fax: 604-10-29
Contact: Lic. Arturo J. Sandoval Monroy
Director General

DATA PRODUCTS DE MEXICO, S.A. DE C.V.
Shakespeare 19
Col. Verónica Anzures
11590 México D.F.
Phone: 254-02-88
Fax: 531-73-72
Contact: Ing. Franco Corti Amalberti
Director General

**DIAGNOSTICOS ADMINISTRATIVOS
POR COMPUTADOR, S.A. DE C.V.**
José Vasconcelos 83
Col. Condesa
06140 México D.F.
Phone: 286-54-77
Fax: 553-49-52
Contact: Ing. Miguel Angel Pineda Joachin
Director General

DIGITA MAGNUM, S.A. DE C.V.
Tlacotalpan 84
Col. Roma Sur
06760 México D.F.
Phone: 264-30-00
Fax: 264-38-46
Contact: Federico Amador Luna
Gerente General

EXECUPLAN, S.A. DE C.V.
Pasadena 11
Col. del Valle
03100 México D.F.
Phone: 687-92-22
Fax: 536-56-59
Contact: Act. Roberto Pulido
Director General

**EXPERTOS EN MANTENIMIENTO DE TERMINALES
ELECTRONICAS, S.A. DE C.V.**
Av. Sto. Tomás 189 Bis
Col. Azcapotzalco
02020 México D.F.
Phone: 352-87-51
Fax: 352-35-96
Contact: C.P. Gustavo González
Director General

GEMINI ELECTRONICA, S.A. DE C.V.
Calle 2a. No. 202
Parque Industrial Monterrey
66600 Cd. Apodaca, N.L.
Phone: (83) 86-21-21 86-10-59
Fax: (83) 86-10-58
Contact: Curtis O. Beavers
Director General

GENETEC, S.A. DE C.V.
Blvd. M. Avila Camacho 1 - Piso 2
Col. Polanco
11560 México D.F.
Phone: 395-96-33
Fax: 395-95-71
Contact: Ing. Carlos Guzmán

GRUPO MORO, S.A. DE C.V.
Diagonal Isabel Prieto 785
Sector Hidalgo
44100 Guadalajara, Jal.
Phone: (36)41-18-32
Fax: (36)41-18-66
Contact: Lic. Humberto Moro
Director General

HEWLETT-PACKARD DE GUADALAJARA, S.A. DE C.V.

Montemorelos 299
Fracc. Lomas Bonita
45060 Guadalajara, Jal.
Phone: (36) 31-46-00
Contact: Mike Forster
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HEWLETT PACKARD DE MEXICO, S.A. DE C.V.

Monte Pelvoux 111
Col. Lomas de Chapultepec
11000 México D.F.
Phone: 326-400-00
Fax: 202-17-82
Contact: Rafael Piccolo Ciriello
Director General

INDUSTRIAS DIGITALES, S.A. DE C.V.

Plateros 7 - Piso 2
Col. Sn. José Insurgentes
03900 México D.F.
Phone: 660-14-95
Fax: 660-10-61
Contact: Renato Pasquel
Director General

INDUSTRIAS MEXICANAS UNISYS, S.A. DE C.V.

Tres No. 1338
Col. Zona Industrial
44940 Guadalajara, Jal.
Phone: (36) 12-02-60
Fax: (36) 12-89-25
Contact: Robert P. Vrancken
Gerente General

INFORMATICA NACIONAL, S.A. DE C.V.

Insurgentes Sur 949 - Piso 6
Col. Nápoles
03810 México D.F.
Phone: 687-02-00
Fax: 687-03-98
Contact: C.P. Fernando Rodríguez Montero
Presidente

INFOSISTEMAS, S.A. DE C.V.

Av. Fuente de Pirámide 1 - Desp. 108
Col. Tecamachalco
53950 Naucalpan de Juárez, Mex.
Phone: 589-92-16 589-32-65
Fax: 294-41-84
Contact: Ing. Victor Scheiman
Director General

INTEGRACION DE TECNOSISTEMAS, S.A. DE C.V.

Av. Nvo. León 67-3
Col. Condesa
06140 México D.F.
Phone: 533-56-03 533-56-94
Fax: 525-07-54
Contact: Ing. Jaime Carrera
Gerente General

INTELECSIS, S.A. DE C.V.

Providencia 631
Col. del Valle
03100 México D.F.
Phone: 669-10-60
Fax: 543-61-71
Contact: Ing. Ignacio Rivero
Director General

INTERGRAPH DE MEXICO, S.A. DE C.V.

Durango 263 - Piso 7
Col. Roma
06700 México D.F.
Phone: 207-52-62
Fax: 207-35-47
Contact: Sr. Gerardo Madrigal del Moro
Director General

KRONOS COMPUTACION Y TELEPROCESO, S.A. DE C.V.

Av. Ejército Nacional 862 - Piso 1
Col. Los Morales Polanco
11510 México D.F.
Phone: 395-53-88
Fax: 557-90-03
Contact: Lic. Manuel Gómez Ortiguza
Director General

MAI DE MEXICO, S.A. DE C.V.

Patriotismo 889 - Piso 6
Col. Mixcoac
03910 México D.F.
Phone: 563-87-00
Fax: 563-29-05
Contact: Ing. Carlos Peña Ramos
Gerente General

MEMOREX TELEX, S.A. DE C.V.

Angel Urraza 1439
Col. Vértiz Narvarte
03600 México D.F.
Phone: 559-65-88
Fax: 559-42-44
Contact: Leonardo Antopia
Director General

METROLOGIA Y DATOS, S.A. DE C.V.

Av. Eugenio Garza Sada 2145
Col. Roma
64700 Monterrey, N.L.
Phone: (83) 58-99-44
Fax: (83) 58-82-50
Contact: Ing. Larry R. Kelso Ponder
Gerente General

MUNDO AUDIOVISUAL, S.A. DE C.V.

Sn. Francisco 524
Col. del Valle
03100 México D.F.
Phone: 660-38-82
Fax: 536-87-56
Contact: Jack Misrachi
Director General

NCR DE MEXICO, S.A. DE C.V.

Av. de las Palmas 239
Col. Lomas de Chapultepec
11000 México D.F.
Phone: 202-39-77
Fax: 202-80-06
Contact: César Muñoz Hodges
Director General

NCR INDUSTRIAL DE MEXICO, S.A.

Autopista México-Puebla Km.125
72030 Puebla, Pue.
Phone: (22) 49-50-00
Fax: (22) 49-59-90
Contact: Ing. Manuel Alonso Castillo
Director General

ORACLE DE MEXICO, S.A. DE C.V.

Ejército Nacional 579 - Piso 1
Col. Granada
11520 México D.F.
Phone: 255-31-66
Fax: 203-50-06
Contact: Ing. Mario Pender Mapelman
Director General

PRINTAFORM, S.A. DE C.V.

Colima 439
Col. Roma Norte
06700 México D.F.
Phone: 553-98-93
Fax: 286-19-30
Contact: C.P. Jorge Espinoza
Presidente Corporativo

REDES Y SISTEMAS DE DATOS, S.A. DE C.V.

Alfonso Esparza Oteo 119
Col. Guadalupe Inn
01010 México D.F.
Phone: 550-66-11 548-88-29
Fax: 550-49-66
Contact: Ing. José Manuel Carrillo
Director General

SEISEME, S.A. DE C.V.

Blvd. M. Avila Camacho 6-A, Desp. 705
Col. El Parque
53390 Naucalpan, Mex.
Phone: 557-70-78
Fax: 557-58-19
Contact: Edmundo Marroquín Leal
Director General

**SERVICIOS INTEGRALES EN REDES
LOCALES E INFOR, S.A. DE C.V.**

Descartes 42
Col. Anzures
11590 México D.F.
Phone: 545-63-27 525-72-71
Fax: 208-65-71
Contact: Ing. Fernando Lezama G.
Director General

SIGA DESARROLLOS, S.A. DE C.V.

Nueva York 115-2
Col. Nápoles
03810 México D.F.
Phone: 682-67-25
Fax: 523-90-60
Contact: Ing. Enrique Rubio Aguayo
Director General

SISTEMAS ADMINISTRATIVOS DE INFORMACION, S.A. DE C.V.

Av. Coyoacán 912
Col. del Valle
03100 México D.F.
Phone: 575-93-37
Fax: 575-64-81
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Patriotismo 767
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03910 México D.F.
Phone: 660-23-93
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Prolongación Norte No. 44 - 4385
Col. 7 de Noviembre
07840 México D.F.
Phone: 537-26-88 759-17-99
Fax: 537-94-19
Contact: Ing. Jorge Salcedo Flores
Director General

UNISYS DE MEXICO, S.A. DE C.V.
Londres 102 - Piso 7
Col. Juárez
06600 México D.F.
Phone: 208-18-00
Fax: 525-57-05
Contact: Ing. Luis Felipe Vega
Director General

WANG DE MEXICO, S.A. DE C.V.
Paseo de la Reforma 295 - Piso 3
Col. Cuauhtémoc
06500 México D.F.
Phone: 207-51-11
Fax: 525-65-18
Contact: Juan Samaniego
Director General

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