EMBASSY OF CANADA

MARKET STUDY OF THE SOFTWARE INDUSTRY IN CHILE ·
FINAL REPORT

OCTOBER 21, 1991

Langton
Clarke

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**MARKET STUDY OF THE SOFTWARE INDUSTRY IN CHILE**

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## Table of Contents

THE SOFTWARE MARKET IN CHILE

Chapter I:     **INTRODUCTION AND PROJECT OBJECTIVES**

1.1.    Introduction and Objectives

The present report contains the results obtained in the market study of the software industry in Chile, conducted for the Canadian Embassy.

The main general objective of this research is to provide a diagnosis of the characteristics and participants of the market, and the present and potential business opportunities for Canadian firms in the various user target segments.

In addition, a listing of participating firms and professional associations is provided, indicating the name, address and phone number, as well as the name and position of an executive to be contacted in case of interest.

With these purposes in mind, we have structured our final report into five chapters each one directed at one specific subject related to the variables relevant to the study.

This first chapter describes the Final Report's contents, structure and methodology.

Chapter two contains a detailed industry supply analysis. The various sections of this chapter cover an overview of the industry and its characteristics, and the identification of the relevant competitors in terms of suppliers in Chile. A directory of the industry participants is provided in this chapter, with an identification profile per company.

The third chapter provides a general description of software categories. The framework of reference for the demand variables is defined, and the results of the field research conducted are analyzed and interpreted. The existing legislation is analyzed as well as the proposed government policies and regulations for the software market.

Chapter four covers the evolution of software imports. The information is presented for participating suppliers and their brands indicating market share in terms of dollars and units.

The projected growth of software imports is estimated for the next two years. Also, software exports are described.

The last chapter of this report provides a summary of the general conclusions of this study and identifies the business opportunities available in this industry for Canadian companies.

## 1.2.  Research Methodology

There is no better way to measure customer preferences and to determine needs and forecast sales (of any service or product) than to ask the people who are responsible for purchasing decisions. Since the purpose of this market study is to determine business opportunities, we have used this approach and while the premise sounds basic enough, in the sprawling and intrincate world of computer hardware and software, identifying the relevant user segments, as well as reaching the key decision makers for these softwares, has not been easy for our research.

We therefore used a combined approach of desk research, analysis from secondary information sources, and an exploratory survey of experts in the subject. In a second stage of our study we identified the universe of users, and selected and interviewed a group of organizations that represent the following sectors:

- Industrial goods
- Government and education
- Financial services
- Energy and telecommunications
- Other services (health services, hotels)

- Software companies
- Professional associations
- Environment-related organizations
- Other relevant organizations

## 1.3.   Survey Demographics

The 10 industry sectors selected as respondents correspond to important categories of business and professional activity which are currently using computer systems and software for their operation and production.   Within each sector 3 to 5 organizations were selected on the basis of their relative importance within the industry.   The organizations represented among the respondents include many of the largest firms in the industry.

# Chapter 2.  Industry Supply Analysis

## 2.1.    Description of Market Participants, and Market Size.

### 2.1.1.  Total Market Size:

According to the data gathered from secondary sources, in interviews to industry experts,users,distributors and the like, the computer industry in Chile in 1990, had sales in U.S. dollars that fluctuated between US$ 250 and US$ 300 million dollars.

This amount can be broken down as follows:

| | | |
|---|---|---|
| . | Software which is made and sold in Chile. | US$ 20 million |
| . | Imported software | US$ 60 to 80 million |
| . | Hardware | US$180 million |
| . | Computer services and consulting | -------- |

These numbers are also backed up by the fact that the market concentrates about half its sales in two companies:  IBM and Sonda.  (See definition in next pages).

IBM total sales in 1990 were approximately US$65 to 70 million dollars; and Sonda declared sales of US$55 million for the year.

Together they add up to US$125 millions which is half of the total market value.

It is interesting to note that according to industry sources, about 4.800 people work in the computer sector.

## 2.1.2. Categories of Software Industry participants:

Participants can be grouped according to various criteria:

(a)   Size, in terms of sales.

(b)   Products or services offered

(c)   Property or/and distributor relationships.

(a)   <u>Size, in terms of sales:</u>

The following table shows the main suppliers grouped by approximate 1990 sales figures in dollars.

Computer Industry Suppliers , according to estimated Sales

### 1990

| Company Name | Estimated Sales |
|---|---|
| A.    Sales over US$50 millions a year | |
| -      IBM | US$65 to 70 |
| -      SONDA | US$55 |
| B.    Sales between US$15 and US$20 millions | |
| -      SISTECO | |
| -      SYNAPSIS | |
| -      COASIN | |
| -      UNYSIS | |
| -      NCR | |
| -      COMPUTERLAND | |
| -      CIENTEC (ACER PC's) | US$20 to 30 |
| C.    Sales between US$5 to US$10 millions | |

All other companies,including Apple, Olivetti,Epson, Wang and others.

**(b)**   Products or Services Offered:

In the enclosed directory we have included a detailed listing of companies according to products and services offered.

The classification used includes:

(b.1)   Hardware

(b.2)   Basic Software:  Almost all of it is imported.  It includes all the operating systems, compilers,etc. which must be compatible with the hardware.

(b.3)   Applications Software

(b.4)   Custom Design of Software or Consulting Services

(b.5)   Systems Integration

**(c)**   Property Relationships:

(c.1)   SONDA (Andrés Navarro Group, Inversiones Pacífico):

<div align="center">Ownership</div>

| | | |
|---|---|---|
| - | Sonda | 100 % |
| - | Binaria | 30 % |
| - | Logica | 30 % |
| - | Orden | 30 % |
| | | (NCR holds another 30%) |
| - | Microcomputadores | ---- |
| - | Coasin | * |
| - | ServiBureau | ---- |

- Sonda:  It sells DIGITAL, software, computer solutions, conducts computer maintenance, provides technical assistance and offers integrated solutions. It is present in almost all sectors of the chilean economy.  Apparently, VAX

may have purchased a participation in Sonda.

- Binaria:  It services IBM equipment and represents in Chile the CYNCOM system.

- Logica:  Represent MAI BASIC 4 and provides service for IBM equipment.

- Orden:  Software development.  It developed a 4th Generation software development tool called DUNGA or CASE AP,on which it produces a variety of applications.

- Microcomputadores:  Represent Lotus, Ashton Tate, and others.

* Coasin is part of an argentinian organization which works as joint venture with local partners in Argentina, Uruguay, Colombia and other latin american countries.  Andrés Navarro as a private entity participates in the company.

(c.2)   Quinta Generacion Group:

President:  Roberto Baeza
- Computerland
- Microcare
- Softland
- Microsoft Chile
- QSoft
- Quinta Generacion Educacion


(c.3)   IBM:  owns 30 % of Sisteco, which in turn owns Terabyte.


It has a network of distributors.

(c.4)   UNYSIS:  distributed by Magenta and Synapsis.

Synapsis:  Owned by Enersis and Unysis.  It is a joint venture between UNYSIS and the Chilectra Holding (Enersis) a local electric power company.  It is part of the Jose Piñera economic group.

(c.5)   Optimisa:  Represents Unysis, Oracle and Stratus.

(c.6)   Ingenac.  It owns INCOM, which represents ESRI in Chile.

It is part of the Francisco Javier Errázuriz economic group.

(c.7)   SIGMA:  Owned by the Anacleto Angelini economic group.  It services the largest industrial fisheries in the country, which are also part of the group.

## 2.2. Directory of Industry Participants

The present Directory contains the most important companies of the industry, that are Software producers, developers, and Software dealers.

On the other hand there are some Companies that work only with Hardware, Peripherals, and other items related to the business.

Some of the companies that are included in one or more sections of the computing business.

Another part of this work actually lists IBM dealers specified in detail.

### CODES

| | | |
|---|---|---|
| SW | : | Software |
| HW | : | Hardware |
| SVCS | : | Services |
| Perif | : | Peripherals |
| Comput | : | General computer business |

# DIRECTORY

```
1 Company     :     A & H COMPUTACION LTDA.
  Address     :     Lautaro 737
  Phone       :     2351178, 2259096
  FAX         :

  Executives  :     José Marcelo Aguayo   Gerente general

  Codes       :     COMPUT.


2 Company     :     ALFA INGENIERIA LTDA
  Address     :     Antonio Varas 2108
  Phone       :          465573
  FAX         :     (562)465573

  Executives  :     Guillermo Gonzalez H. Gerente

  Codes       :     SW,SVCS.


3 Company     :     ALEF DATA LTDA.
  Address     :     Bandera 236 Piso 5 of.19-A.
  Phone       :          6985011
  FAX         :     (562)6972037

  Executives  :     Rafael Alvo C.     Gerente General

  Codes       :      SW


4 Company     :     ARCADING
  Address     :     Miguel Claro 399
  Phone       :     496123, 43558
  FAX         :     (562)496123

  Codes       :     HW, SVCS


5 Company     :     ASSIN LTDA.
  Address     :     Vicuña Mackenna 1491
  Phone       :     5550930, 5555372.
  FAX         :

  Executives  :     LEONIDAS TAMBLAY P.   Gerente General

  Codes       :     SVCS
```

```
 6 Company      :      AUPRIN S.A.
   Address      :      CAPULLO 2240

   Phone        :      494957, 2514129
   FAX          :      (562)2319108

   Codes        :      SW


 7 Company      :      AUTYS LTDA
   Address      :      Providencia 1244 Of 23
   Phone        :             491945
   FAX          :      (562)491945

   Executives   :      Eduardo Barceló      Gerente General
                       Larry Watson         Gerente Técnico

   Codes        :      SW


 8 Company      :      AEG OLYMPIA CHILE S.A.
   Address      :      Rodrigo de Araya 1045
   Phone        :            2381520
   FAX          :      (562)2381876

   Executives   :      Pedro Reyes          Gerente Div Informát

   Codes        :      HW, SW.


 9 Company      :      AISOFT S.A.
   Address      :      Los Conquistadores 1700 P.17-B
   Phone        :            2317015
   FAX          :      (562)2332565

   Executives   :      Jaime Nuñez V

   Codes        :      SW


10 Company      :      ASC S.A.
   Address      :      Austria 2041
   Phone        :      2235946
   FAX          :      (562)2332565

   Executives   :      Ricardo Bortzutzky   Gerente General.

   Codes        :      SW, HW, SVCS.
```

```
11 Company    :    AXON S.A
   Address    :    Apoquindo 3161 of 91
   Phone      :        2314019
   FAX        :    (562)2314019

   Executives :    Manuel Figueroa B.     Gerente General

   Codes      :    SVCS, SW.


12 Company    :    Arrayán Editores S.A.
   Address    :    Bernarda Morín 435
   Phone      :        2744769
   FAX        :    (562)395493

   Executives :    Víctor Pérez V.        Gerente de Ventas.

   Codes      :    SW.


13 Company    :    ARS INNOVANDI S.A.
   Address    :    Providencia 2184 Piso 3
   Phone      :        2318928
   FAX        :    (562)2319756

   Executives :    Pablo Fernandez        Encargado de Soporte

   Codes      :    SW.


14 Company    :    ASESEC LTDA
   Address    :    Providencia 1244 piso 2 of A
   Phone      :    2253450, 2351140
   FAX        :    (562)2351140

   Executives :    Luis Castro V.         Socio Ejecutivo

   Codes      :    HW, SW, SVCS.


15 Company    :    ASICOM COMERCIAL S.A.
   Address    :    Mar del Plata 2147
   Phone      :        2745090
   FAX        :    (562)2742963

   Executives :    Aldo Moyano            Gerente general.
                   Eduardo Gallardo       Gerente de Ventas

   Codes      :    HW, SW, SVCS.
```

```
16  Company    :    ASICOM INTERNACIONAL S.A.
    Address    :    Mar del Plata 2147
    Phone      :        2742875
    FAX        :    (562)2742963

    Executives :    Christian Sepúlveda    Product Manager.
                    Alvaro Lavin C         Gerente de Admin .

    Codes      :    SVCS


17  Company    :    BIGSA S.A.
    Address    :    Francisco de Noguera 41 Piso 4
    Phone      :        2320323
    FAX        :    (562)6969368

    Executives :    Luis Pino Pantoja     Subgerente Comercial

    Codes      :    SW


18  Company    :    BINARIA S.A.
    Address    :    Teatinos 350
    Phone      :        6962133
    FAX        :    (562)2232789

    Executives :    Sergio García Molina    Gerente Comercial

    Codes      :    HW, SW.


19  Company    :    BRAIN S.A.
    Address    :    Ramón Carnicer 43
    Phone      :    2221182, 344180
    FAX        :    (562)344180

    Executives :    Gilda Dondero C.      Gerente

    Codes      :    HW, SW.


20  Company    :    BROWSE LTDA.
    Address    :    Huelén 85 ofic 3
    Phone      :        460921
    FAX        :    (562)2352459

    Executives :    Manuel Donoso O.     Gerente Comercial

    Codes      :    SW, SVCS.
```

```
21 Company    :    BYSUPPORT
   Address    :    Rafael Cañas 50-F
   Phone      :        2231532
   FAX        :    (562)2518703

   Executives :    J. de Dios Fernandez  Gerente General

   Codes      :    HW, SW.


22 Company    :    Centro Integrador de Datos
   Address    :    Irarrázabal 5119
   Phone      :        2275481
   FAX        :

   Executives :    Eduardo Baeza          Gerente

   Codes      :    SW


22 Company    :    CENTRO-SOFT
   Address    :    Marin 37 of 102
   Phone      :        2222631
   FAX        :

   Executives :    Jaime Leonart M.       Gerente

   Codes      :    HW, SW.


23 Company    :    CIA CHILENA DE SOFTWARE S.A
   Address    :    Huérfanos 1373 of 1306
   Phone      :        6972320
   FAX        :    (562)6980847

   Executives :    Guillermo Danker B.   Gerente General

   Codes      :    SVCS, SW.


24 Company    :    CIENTEC S.A.
   Address    :    Antonio Varas 754
   Phone      :        2743508
   FAX        :    (562)2232789

   Executives :    Hermann Barentin N.   Gerente General
                   Paulette Ivovich O.    Asistente de Mktg.

   Codes      :    Acer, Sun Microsystems, HW,SW,Perif.
```

```
25 Company   :   CID
   Address   :   Irarrázabal 5119
   Phone     :   2275481
   FAX       :

   Executives :  Eduardo Baeza H.      Gerente

   Codes     :   SW


26 Company   :   CIGAR LTDA.
   Address   :   Carlos Larrain Claro 1981 of.3
   Phone     :   2743053, 2254827.
   FAX       :

   Codes     :   SVCS


27 Company   :   CIISA
   Address   :   Pedro de Valdivia 2103
   Phone     :   2232616, 2047677
   FAX       :   (562)2231066, 2047245

   Executives :  Waldo del Moral        Jefe de Admin. y Fza

   Codes     :   SVCS, SW.


28 Company   :   CIM-COMTRADE
   Address   :   General Flores 197
   Phone     :   22535187
   FAX       :   (562)2351131

   Executives :  Felipe Zelada M.       Socio Director

   Codes     :   HW, SVCS.


29 Company   :   CITEX S.A.
   Address   :   Los Urbinas 87 of. 30
   Phone     :   2334499
   FAX       :   (562)2320176

   Executives :  Eduardo Garcia L.      Gerente Comercial

   Codes     :   HW, SW.
```

```
30 Company    :    CMS ENHACEMENTS INC
   Address    :    Portugal 300 Piso 2
   Phone      :    344218, 342893
   FAX        :    (562)343589

   Executives :    Rafael del Campo M.   Gerente General

   Codes      :    HW


31 Company    :    CADE CONSULTORES S.A.
   Address    :    Dublé Almeyda 2544
   Phone      :    2742226, 2746040
   FAX        :    (562) 2745315

   Executives :    Lautaro Carcamo S.            Director
                   Sergio Pinedo F.             Director

   Codes      :    SW,Consult.


32 Company    :    Coasin Chile Ltda.
   Address    :    Holanda 1292
   Phone      :         2250463
   FAX        :    (562)497430

   Executives :    Aurelio Montenegro   Gerente Comercial

   Codes      :    HW,PERIf,SW


33 Company    :    COMDATA LTDA.
   Address    :    Providencia 2653 Loc.40
   Phone      :         2321791
   FAX        :

   Codes      :    SW


34 Company    :    COMICROM
   Address    :    Mac Iver 125 Pisos 4 y 9
   Phone      :         394747
   FAX        :    (562)330923

   Executives :    Henry Manzano Z.     Gerente General
                   Gabriel Lopez V.     Mktg. Support.

   Codes      :    SVCS.
```

```
Company    :    COMGRAP
Address    :    Providencia 2370 of 52
Phone      :       2323021
FAX        :    (562)375426

Executives :    Gabriela Ward V.      Gerente General

Codes      :    HW,SW,PERIF.


Company    :    CYC SISTEMAS COMPUTACIONALES S.A.
Address    :    Monjitas 626 of 74
Phone      :    394861, 396726
FAX        :    (562)396726

Executives :    Federico Carrizo T.   Gerente Comercial

Codes      :    HW, SW.


Company    :    COMPUTERAGE LTDA.
Address    :    Suiza 2043
Phone      :       2047077
FAX        :    (562)2747707

Executives :    J.Pablo Spoerer.      Gerente general.
                Jorge Spoerer         Gerente de Ventas
                Mauricio Valderrama   Subgte. de Ventas

Codes      :    SW, HW, SVCS.


Company    :    COMPUTACION INTEGRAL S.A.
Address    :    Carlos Antúnez 2415
Phone      :       2330248
FAX        :    (562)2320297

Codes      :    Comput.


Company    :    COMPUTACIONES CORAL LTDA.
Address    :    Bilbao 1414
Phone      :    2742764, 40420, 2740570.
FAX        :

Executives :    Carlos Quintana Ch.   Socio.

Codes      :    HW
```

```
40 Company    :    COMPUTER BUSINESS LTDA.
   Address    :    Estado 215 of 214
   Phone      :         6321576
   FAX        :

   Codes      :    Comput.


41 Company    :    COMPUVISION S.A.
   Address    :    Compañia 1357 Piso 7
   Phone      :    6962133, 6998817
   FAX        :    (562)6969386

   Codes      :    HW


42 Company    :    COMPUTERLAND
   Address    :    Av Sta.María 2560
   Phone      :         2316835
   FAX        :    (562)2316835

   Executives :    Lily Corvalan        Gerente General

   Codes      :    HW, SW.


43 Company    :    CONDE S.A.
   Address    :    Huerfanos 1160 of 1103
   Phone      :         6967043
   FAX        :    (562)6991125

   Executives :    Diana Hielbig        Gerente de Ventas

   Codes      :    HW, SW, SVCS.


44 Company    :    CONTAC INGENIEROS LTDA.
   Address    :    Fco. Bilbao 2921
   Phone      :         2232677
   FAX        :    (562)2255706

   Executives :    Luis Yacher Schatz   Director

   Codes      :    SW
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```
45 Company     :      CONTAGIO COMPUTACION
   Address     :      El Quichua 1240
   Phone       :         2060984
   FAX         :      (562)2317403

   Executives  :      Edward Roe L.    Gerente

   Codes       :      SW.


46 Company     :      CRONO COMPUTACION LTDA.
   Address     :      Av Bulnes 107 of 54
   Phone       :         6981841
   FAX         :

   Codes       :      Comput.


47 Company     :      DATA GENERAL CHILE S.A.
   Address     :      Av 11 de Sept.2353 piso 3
   Phone       :         2314631
   FAX         :      (562)2333980

   Executives  :      Rodolfo Lütges D.      Gerente General
                      Marcelo Pardo B.       Sub Gte. de Mktg.

   Codes       :      HW,SW.


48 Company     :      DATA CHILE LTDA.
   Address     :      Av Lib. B.O'Higgins 155 of 31
   Phone       :      381626, 397079.
   FAX         :

   Codes       :      SVCS.


49 Company     :      DATACORP LTDA.
   Address     :      San Crescente 240
   Phone       :      2315425, 2324315.
   FAX         :      (562)2327567

   Executives  :      Alejandro Artigas M.   Gerente Comercial

   Codes       :      HW, SW
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```
50  Company    :   DATALAND S.A.
    Address    :   4 Norte 337, Viña del Mar.
    Phone      :   688081, 881863.
    FAX        :   (5632)881863

    Executives :   Vinicio Vega Johnson. Gerente General.

    Codes      :   HW,SW,SVCS.


51  Company    :   DATAMERICA S.A.
    Address    :   Av. Pedro de Valdivia 1642
    Phone      :   2049464, 408503,2049460.
    FAX        :   (5632)2049469

    Executives :   Patricio Contreras    Soporte de Marketing

    Codes      :   SVCS.


52  Company    :   DATASOFT S.A.
    Address    :   Polonia 285-a.
    Phone      :       2467443
    FAX        :   (562)2080591

    Executives :   Marcelo Escudero H.   Gerente General

    Codes      :   SVCS.


53  Company    :   DIGISA S.A.
    Address    :   Las Hortensias 2371
    Phone      :       2310773
    FAX        :

    Executives :   Julio Sillard A.      Gerente Operaciones

    Codes      :   Comput.


54  Company    :   DECEL LTDA.
    Address    :   Av 11 de Sept 1160 of 151
    Phone      :       2322009
    FAX        :

    Codes      :   Comput.
```

```
Company     :        DELCO COMPUTACION
Address     :        Eyzaguirre 122 of 144
Phone       :            6953231
FAX         :

Codes       :        Comput.


Company     :        DEMCO LTDA.
Address     :        Fco. Bilbao 241
Phone       :        342462, 341855
FAX         :

Executives  :        Cristián Fernandez C. Gerente General

Codes       :        HW


Company     :        DESICOM S.A.
Address     :        Las Hortensias 2314
Phone       :            2310675
FAX         :

Codes       :        HW, SW.


Company     :        DICEC LTDA
Address     :        Triana 849
Phone       :            2748883
FAX         :        (562)6993316

Executives  :        Juan Luis Salazar     Gerente general

Codes       :        HW, SW, SVCS.


Company     :        DISOFT LTDA
Address     :        Tucapel 0293
Phone       :            2742177
FAX         :

Executives  :        Carlos P. Prieto M.    Socio Gerente

Codes       :        SW, SVCS.
```

```
60 Company    :   DPC
   Address    :   El Gobernador 017
   Phone      :        2517218
   FAX        :   (562)2517199

   Codes      :   Comput.


61 Company    :   DTS LTDA.
   Address    :   Rosas 1444
   Phone      :        6970991
   FAX        :   (562)6993316

   Executives :   Jaime Pacheco Matte   Gerente Comercial

   Codes      :   SW SVCS


62 Company    :   EDAPI LTDA
   Address    :   Los Leones 2215
   Phone      :        2516568
   FAX        :   (562)2513835

   Executives :   Osvaldo Retamal B.    Gerente de Mktg.

   Codes      :   SVCS.


63 Company    :   EMPRODAT
   Address    :   Diagonal Oriente 5621-A
   Phone      :        2276771
   FAX        :

   Executives :   Robinson Cabrera S.   Gerente

   Codes      :   HW,SW.


64 Company    :   ENLACE COMPUTACION.
   Address    :   Barros Errázuriz 1902
   Phone      :        2258504
   FAX        :

   Executives :   J.Pablo Stevenson P.   Gerente de Finanzas

   Codes      :   SW.
```

| | | |
|---|---|---|
| Company | : | EPSON CHILE S.A. |
| Address | : | Av. Andrés Bello 2287 |
| Phone | : | 2324661 |
| FAX | : | (562)2315640 |
| Executives | : | Drago Eterovic        Gerente General |
| Codes | : | HW. |

| | | |
|---|---|---|
| Company | : | ESI LTDA. |
| Address | : | Agustinas 641 of 42 |
| Phone | : | 393364 |
| FAX | : | |
| Executives | : | Rodolfo Orellana M.    Gerente General |
| Codes | : | SVCS, SW. |

| | | |
|---|---|---|
| Company | : | EXCELSYS S.A. |
| Address | : | Guanabara 1172 |
| Phone | : | 2122151 |
| FAX | : | (562)2115314 |
| Executives | : | Christian Paccot      Gerente |
| Codes | : | SW, SVCS. |

| | | |
|---|---|---|
| Company | : | FINALDATA LTDA. |
| Address | : | Rosal 361 |
| Phone | : | 391237, 393667 |
| FAX | : | |
| Executives | : | Italo Riderelli F.    Gerente General |
| | | Miguel A.Soza P.      Gerente Técnico |
| Codes | : | HW, SW, SVCS. |

| | | |
|---|---|---|
| Company | : | FLEX-TECH CHILE |
| Address | : | Av Fco. Bilbao 2809 |
| Phone | : | 460470, 494664 |
| FAX | : | (562)494664 |
| Executives | : | Juan Carlos Parra P. Gerente de Ventas |
| Codes | : | HW, SW. |

```
70 Company    :    GESTION S.A.
   Address    :    Casilla 319, correo 3
   Phone      :    345886, 345715
   FAX        :    (562)2229396

   Executives :    Nicolás Gabor       Director
                   Rodrigo Carvallo J.  Gerente

   Codes      :    SW.


71 Company    :    GENSOFT S.A.
   Address    :    Suarez Mujica 280
   Phone      :    493659,,2399210
   FAX        :    (562)2257445

   Executives :    Gino Castillo P.    Gerente

   Codes      :    HW, SW, SVCS.


72 Company    :    GEOCOM
   Address    :    Av Slavador 1105
   Phone      :    2749325, 2742559
   FAX        :    (562)490476

   Codes      :    SW, SVCS.


73 Company    :    GENSYS LTDA
   Address    :    Suarez Mujica 280
   Phone      :         493659
   FAX        :    (562) 2387467

   Executives :    Cesar P. Rodriguez G.   Socio Gerente

   Codes      :    SW, SVCS.


74 Company    :    HEWLETT PACKARD.
   Address    :    E.Concha y Toro 65
   Phone      :    6969665, 6960031
   FAX        :    856296969665

   Codes      :    HW, SW, SVCS.
```

```
75  Company      :      HOLMES Y CIA.
    Address      :      Matías Cousiño 64 of 708
    Phone        :      6986696, 2425174.
    FAX          :      (562)6981474

    Codes        :      SW.


76  Company      :      HOST CHILE S.A.
    Address      :      Barcelona 2086
    Phone        :      2516522, 2331844
    FAX          :      (562)2332280

    Executives   :      Arturo Ríos M.          Gerente Comercial

    Codes        :      SW, HW.


77  Company      :      IBM CHILE S.A.
    Address      :      Providencia 655
    Phone        :            334400
    FAX          :      (562)396999

    Executives   :      Luis A. Barbosa         Gerente General

    Codes        :      HW, SW.


78  Company      :      ICSA
    Address      :      Av Bustamante 24 Of.A
    Phone        :            2231125
    FAX          :      (562)2221875

    Codes        :      Comput


79  Company      :      IMEX ESTADO LTDA.
    Address      :      San Diego 1601
    Phone        :            5559468
    FAX          :      (562)5517212

    Executives   :      Jorge Aguirre G.    Gerente Técnico

    Codes        :      HW, SW.
```

```
80 Company   :   IMPEX UNIVERSAL SANTIAGO
   Address   :   Encomenderos 106-2A
   Phone     :        2334180
   FAX       :   (562)2086061

   Executives :   Gaby Wolf K          Gerente

   Codes     :   HW,SVCS.


81 Company   :   IMAGEN-CONSORCIO  INDEPRO METACONTROL
   Address   :   Santa Magdalena10 of 22
   Phone     :        2326124
   FAX       :   (562)2318946

   Executives :   Pablo Bañados M.     Gerente Tecnico.

   Codes     :   SW.


82 Company   :   INEX S.A
   Address   :   Valentin Letelier 20 of 201
   Phone     :        6980029
   FAX       :   (562)6964040

   Executives :   Mario Herane         Director-Gerente

   Codes     :   HW,SW.


83 Company   :   INFORMAT S.A
   Address   :   Fco.Bilbao 3020
   Phone     :        2514145
   FAX       :   (562)2252448

   Executives :   Hernan Contreras S.  Gerente Comercial
                  Francisco Lagos      Jefe de Distribución

   Codes     :   SW, SVCS.


84 Company   :   INFORMIX CHILE S.A.
   Address   :   Carlos Antúnez 1954
   Phone     :        462017
   FAX       :   (562)2516707

   Executives :   Ivan Orellana P.     Gerente Operaciones
                  Benita Izquierdo     Product Marketing.

   Codes     :   SW.              - 26 -
```

```
85 Company      :       INFOCHILE
   Address      :       Arturo Ureta 1030
   Phone        :       482715, 2284272.
   FAX          :       (562)2233664

   Executives   :       Daniel Shapira E.      Gerente General
                        Marcelo Shapira E.     Gerente Técnico

   Codes        :       HW, SW.


86 Company      :       INFOLAND
   Address      :       Apoquindo 3291
   Phone        :       2390656, 2390623.
   FAX          :

   Executives   :       Cristian Sarras        Gerente

   Codes        :       HW, SW.


87 Company      :       INFORNA S.A.
   Address      :       Pedro de Valdivia 0119
   Phone        :           2512512
   FAX          :       (562)6994594

   Executives   :       Rafael C. Manzur S.    Gerente General

   Codes        :       HW.


88 Company      :       INGENIERIA DE SOFTWARE LTDA.
   Address      :       Andacollo 2095
   Phone        :       09-2231947,2255791
   FAX          :       (562)2252448

   Executives   :       Francisco Lagos        Jefe de Distribución

   Codes        :       HW, SW.


89 Company      :       INGENAC S.A.
   Address      :       Av Pedro de Valdivia 800
   Phone        :           2339935
   FAX          :       (562)2341107

   Executives   :       David Daer             Gerente Técnico

   Codes        :       HW, SW.
```

```
90 Company     :     INGEVAL S.A.
   Address     :     Hernando de Aguirre 11 of H.
   Phone       :     2321242, 2316390
   FAX         :     (562)2321242, 2316390

   Executives  :     Andrés del Valle      Gerente Operaciones

   Codes       :     SW.


91 Company     :     INTERVIDEO LTDA.
   Address     :     Antonio Varas 637
   Phone       :          2741146
   FAX         :     (562)2255459

   Executives  :     Carlos Contreras Q.   Gerente General.
                     Stuart Allsop         Gerente de Productos

   Codes       :     SW,SVCS.


92 Company     :     JMO INTERNACINAL LTDA
   Address     :     Melchor Concha y Toro 15
   Phone       :          375275
   FAX         :     (562)775258, 2283863.

   Executives  :     Jean Marie Menager    Socio Gerente
                     Ana Maria Urrutia N.  Socio Gerente

   Codes       :     SW


93 Company     :     KODAK CHILENA S.A.F.
   Address     :     Alonso Ovalle 1180
   Phone       :          6982571
   FAX         :     (562)6970310

   Executives  :     Ricardo Gebauer       Gerente de Marketing

   Codes       :     HW, SW.


94 Company     :     KREO
   Address     :     Ismael Valdes Vergara 360 of 62.
   Phone       :     381038, 382697
   FAX         :     (562)381038

   Executives  :     Izac Zycer B.         Gerente General

   Codes       :     SW.
```

```
95 Company      :      LAST CALL COMPUTACION S.A.
   Address      :      Santo Domingo 588 pis 1
   Phone        :           398685
   FAX          :      (562)6993356

   Executives   :      Patricio Galvez M .    Gerente General

   Codes        :      SW, SVCS.


96 Company      :      LATINDATA S.A.
   Address      :      Eliodoro Yañez 2596
   Phone        :      2310144, 2310743
   FAX          :      (562)22310585

   Executives   :      J. Antonio Tamés E.   Gerente

   Codes        :      HW, SW


97 Company      :      LOGICA S.A.
   Address      :      Eleodoro Yañez 1215
   Phone        :           2233828
   FAX          :      (562)2237835

   Executives   :      Alberto Ulriksen J.   Director de Marketin

   Codes        :      HW, SW.


98 Company      :      LOGISCOMP
   Address      :      Av. Sur 3657 Edificio 19 of 319
   Phone        :           6816438
   FAX          :      (562)6816430

   Executives   :      Hugo Ortiz V.         Gerente General

   Codes        :      HW, SW.


99 Company      :      MAGENTA COMPUTACION S.A.
   Address      :      Callao 3332
   Phone        :           2467777
   FAX          :      (562)2322140

   Executives   :      Gerardo Brunner       Gte. de Admin y Fin.

   Codes        :      HW, SW.
```

```
100 Company     :     MATRICIAL
    Address     :     La Unión 3000
    Phone       :           354066
    FAX         :     (562)779516

    Executives  :     Angel Tamayo          Gte. de Desarrollo

    Codes       :     HW, SW.


101 Company     :     METASOFT LTDA.
    Address     :     Av. Libertador B. O'higgins 142 of 236
    Phone       :           6322655
    FAX         :     (562)6322655

    Executives  :     Mauro Cavalcante      Gerente de Sistemas

    Codes       :     SW.


102 Company     :     METRODATA CHILE
    Address     :     Luis Thayer Ojeda 1234
    Phone       :           2310648
    FAX         :     (562)2320975

    Executives  :     Mariano Gallego J.    Gerente General

    Codes       :     HW, SW.


103 Company     :     MICROBYTE
    Address     :     Passy 506
    Phone       :           2222699
    FAX         :     (562)2222699

    Executives  :     Lily Corvalán         Gerente Comercial.

    Codes       :     HW,SW.


104 Company     :     MICROCARE LTDA.
    Address     :     Pedro de Valdivia 424
    Phone       :           2341005
    FAX         :     (562)2339888

    Executives  :     Alejandro Manríquez G  Gerente General

    Codes       :     HW, SW, SVCS.
```

```
105 Company      :      MICROGEO LTDA
    Address      :      Valenzuela Castillo 1608
    Phone        :           2251410
    FAX          :      (562)2234987

    Executives   :      Robert Richter Stein  Gerente Comercial

    Codes        :      SW, PERIF.


106 Company      :      MICROSOFT
    Address      :      Calderón 125
    Phone        :           2250755
    FAX          :      (562)44042

    Executives   :      Arturo Alba           Presidente Ejecutivo

    Codes        :      SW.


107 Company      :      MICROSYSTEM S.A.
    Address      :      José Miguel de la Barra 536 pisos 4 y 5.
    Phone        :           391070
    FAX          :      (562)334525

    Executives   :      Claudio Orsini G.    Gerente General.
                        Raul Muñoz S.        Gerente Comercial.

    Codes        :      HW, SW.


108 Company      :      MINISYS DE CHILE
    Address      :      Condell 801-A
    Phone        :      341749,345387
    FAX          :      (562)341749,345387

    Executives   :      Luis Bernstein        Gerente

    Codes        :      HW.


109 Company      :      MODULA LTDA.
    Address      :      Luis Pasteur 6575-b
    Phone        :      2421220, 2422683
    FAX          :      (562)2421220

    Executives   :      Roberto Mahave
                        Andres Rojas

    Codes        :      SVCS, SW.
```

```
110  Company      :      NCR DE CHILE S.A.
     Address      :      Mac Iver 370
     Phone        :           380013
     FAX          :      (562)334416

     Executives   :      Frederick Price     Gerente Comercial (I
                         Rodney Everard      Gerente Comercial (I
                         Leonel Reich        Gerente Comercial (I

     Codes        :      HW, SW, SVCS.


111  Company      :      NETCO LTDA.
     Address      :      Diagonal Paraguay 458 Piso 2
     Phone        :      335425, 331774
     FAX          :

     Codes        :      SVCS.


112  Company      :      NETCOM COMPUTER SYSTEM
     Address      :      Av Ossa 2259
     Phone        :           2275178
     FAX          :      (562)6992675

     Codes        :      Comput.


113  Company      :      NEXO COMPUTACION
     Address      :      Av Seminario 653
     Phone        :           2229416
     FAX          :

     Executives   :      Humberto Lira V.     Gerente Comercial

     Codes        :      SW


114  Company      :      NEXUS LTDA.
     Address      :      Eliodoro Yañez 1075 of 11
     Phone        :           493871
     FAX          :

     Executives   :      Genaro Villarino A.  Gerente de Finanzas

     Codes        :      SW.
```

```
115 Company      :      OLIVETTI DE CHILE S.A.
    Address      :      Santa Elena 1587
    Phone        :          5567401
    FAX          :      (562)5567712

    Executives   :      Pablo Flores Chiesa   Director Comercial P

    Codes        :      HW, SW.



116 Company      :      ONDAC LTDA.
    Address      :      Arzobispo Larraín Gandarillas 335
    Phone        :      346381 ,2228452
    FAX          :      (562)346380

    Executives   :      Paul Menard A.        Gerente General

    Codes        :      HW, SW.



117 Company      :      ORACLE DE CHILE S.A.
    Address      :      Marchant Pereira 10 Piso 17
    Phone        :      2319118, 2318239.
    FAX          :      (562)2332798

    Executives   :      Pedro Aravena Córdova,   Director Gerente.

    Codes        :      SW.



118 Company      :      OPTIMISA
    Address      :      Eliodoro Yañez 890
    Phone        :      490336, 2352360.
    FAX          :      (562)461367

    Executives   :      Alfredo Piquer G.     Presidente
                        Fernando Prieto       Gerente General

    Codes        :      HW, SW.



119 Company      :      ORDEN S.A.
    Address      :      Huérfanos 1052 Piso 12
    Phone        :          6953330
    FAX          :      (562)6993368

    Executives   :      Adriana Muñoz         Marketing

    Codes        :      SW.
```

```
120 Company      :    PERSYS
    Address      :    Roosvelt 1618 ,Concepción
    Phone        :    041-231378
    FAX          :    (562)041-228887

    Executives   :    Mansour Sedaghat.      Gerente General

    Codes        :    HW,SW.


121 Company      :    PC STORE LTDA.
    Address      :    Providencia 1449
    Phone        :          499908
    FAX          :    (562)2351253

    Executives   :    Ronald Heidecker V.   Gerente General

    Codes        :    HW,SW,SVS.


122 Company      :    PHANTOM INGEN. DE SOFTWARE LTDA.
    Address      :    Apoquindo 3161 depto.91
    Phone        :          2314019
    FAX          :    (562)2314019

    Executives   :    J.Franco Bevilacqua V Gerente Comercial.

    Codes        :    SW.


123 Company      :    PRICE WATERHOUSE
    Address      :    Huérfanos 863
    Phone        :          383023
    FAX          :    (562)333329

    Executives   :    Patricia Méndez M.    Gerente Ing. Softwar

    Codes        :    HW,SW,SVCS.


124 Company      :    PRIOR CHILE LTDA.
    Address      :    Holanda 1882
    Phone        :    490445, 491384
    FAX          :    (562)491384

    Executives   :    Jimmy Black C.        Gerente

    Codes        :    HW, SW.
```
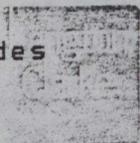
```
125 Company      :        PROBYTE
    Address      :        Merced 335 piso 5
    Phone        :            398892
    FAX          :        (562)6990147

    Executives   :        Enrique Benavides Z. Gerente

    Codes        :        SW, SVCS.


126 Company      :        PROGRAM SOC.
    Address      :        General Holley 76
    Phone        :            2517447
    FAX          :

    Executives   :        Patricia Tapia C.     Gerente

    Codes        :        Comput.


127 Company      :        PROCESAC
    Address      :        Moneda 1137 piso 3
    Phone        :            6970013
    FAX          :        (562)723751

    Executives   :        Alejandro Castro U.  Gerente General

    Codes        :        HW,SW,SVCS.


128 Company      :        RADIO-SHACK, TANDY
    Address      :        Francisco de Noguera 42
    Phone        :            2315627
    FAX          :

    Codes        :        HW, SW.


129 Company      :        REDCOM S.A.
    Address      :        Obispo Donoso 9-a
    Phone        :            2747987
    FAX          :        (562)2049581

    Executives   :        Bernardo Andrews O.  Gerente Div. Sist.y

    Codes        :        SW.
```

```
130 Company      :      RIGG S.A.
    Address      :      Av. Salvador 1068
    Phone        :      496595, 2250222
    FAX          :      (562)2250240

    Executives   :      Ricardo Gutierrez G. Gerente
                        Oscar García M.        Gerente  Operaciones

    Codes        :      SW,PERIF.


131 Company      :      RIMPEX CHILE S.A.
    Address      :      Pedro de Valdivia 1667

    Phone        :          2235721
    FAX          :      (562)2231129

    Executives   :      Javier Vasquez M.    Gerente General.
                        Carol Heitmann R.    Gerente Comercial

    Codes        :      HW, SW, SVCS.


132 Company      :      ROOT & CIA
    Address      :      Monjitas 626 of 41 - 65
    Phone        :      336450, 384654
    FAX          :      (562)2231129

    Codes        :      HW, SVCS.


133 Company      :      SUN MOON STAR CHILE S.A.
    Address      :      Av. Suecia 2307 - 2323
    Phone        :      490507, 490513, 2234270
    FAX          :      (562)494737

    Codes        :      HW,SW,SVCS.


134 Company      :      SCANDATA S.A.
    Address      :      Providencia 1100 of 802
    Phone        :          2257289
    FAX          :      (562)2257289

    Executives   :      Andrés Acuña          Gerente Técnico

    Codes        :      SW, SVCS.
```
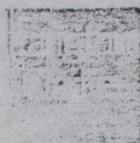
```
135 Company    :    SCI SOFTSERVICE LTDA
    Address    :    Caupolicán 567 of 808, Concepción.
    Phone      :    041-236718
    FAX        :

    Codes      :    SVCS.


136 Company    :    SEACOM LTDA.
    Address    :    La Concepción 338
    Phone      :        2741953
    FAX        :    (562)2741953

    Executives :    Fidel Labarca M.      Socio

    Codes      :    HW, SW, SVCS.


137 Company    :    SERCOM LTDA.
    Address    :    Rafael Cañas 16 piso 5, of J
    Phone      :    2251249, 2049476.
    FAX        :

    Executives :    J. Pablo Schiaffino    Gerente general

    Codes      :    SW.


138 Company    :    SECOM LTDA.
    Address    :    Av. Condell 1231 piso 6 Valparaíso
    Phone      :    (032)234117
    FAX        :    (5632)233887

    Executives :    Sergio Vargas T.      Gerente Comercial.

    Codes      :    SW.


139 Company    :    SISTECO S.A.
    Address    :    VECINAL 40
    Phone      :        2341644
    FAX        :    (562)2339895

    Executives :    Sebastian Ramirez C. Presidente

    Codes      :    HW,SW,SVCS.
```
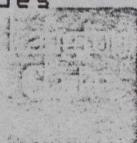
```
140 Company      :    SISTEMAS DIGITALES S.A.
    Address      :    Av  Libertador B.O'Higgins 2432
    Phone        :         728514
    FAX          :    (562)6983429

    Executives   :    Gerardo Gorodisher T. Gerente de Marketing

    Codes        :    HW, SW, SVCS.


141 Company      :    SINCLAIR CHILE LTDA.
    Address      :     Luis Thayer Ojeda 1234
    Phone        :    2310648, 2514350
    FAX          :    (562)2516343

    Codes        :    HW, SW.


142 Company      :    SISTEMAS COMPUTACIONALES LTDA.
    Address      :    Alfredo Rioseco 0288
    Phone        :         2229406
    FAX          :

    Codes        :    COMPUT.


143 Company      :    SITU LTDA.
    Address      :    Carlos Antúnez 1831 of 206
    Phone        :         493470
    FAX          :

    Codes        :    SW


144 Company      :    SOFOS CMA
    Address      :    Teatinos 251 Of401
    Phone        :    6984322, 6961053
    FAX          :    (562)6989169

    Executives   :    Emilio Ander Fuhren  Director Gerente

    Codes        :    SW.
```

```
145 Company     :     SOFTLAND LTDA.
    Address     :     7º de Línea 1247
    Phone       :     40090, 40100
    FAX         :     (562)2233153

    Executives  :     Luis Alberto Erazo   Gerente General

    Codes       :     HW, SW, SVCS.


146 Company     :     SOFTLOGIC S.A.
    Address     :     Av. Fermin Vivaceta 1790
    Phone       :         353107
    FAX         :     (562)353009

    Executives  :     Patricio Fernandez D. Gerente General

    Codes       :     HW, SW.


147 Company     :     SOLUCIONES COMPUTACIONALES S.A.
    Address     :     Phillips 451 of 503
    Phone       :         6965774
    FAX         :     (562)6965774

    Codes       :      Comput


148 Company     :     SONDA LTDA.
    Address     :     Teatinos 574
    Phone       :         6962277
    FAX         :     (562)714666

    Executives  :     Pablo Rosselot P.    Coordinador

    Codes       :     HW, SW. SVCS.


149 Company     :     ST COMPUTACION
    Address     :     Génova 2086
    Phone       :     2514571, 2744679.
    FAX         :

    Executives  :     J. Pedro Torres     Gerente General

    Codes       :     SW, HW, SVCS.
```

```
150 Company      :      SUCCESS
    Address      :      Merced 152 Piso 4
    Phone        :           393951
    FAX          :      (562)334022

    Executives   :      Pedro Pablo Laso B.   Gerente General

    Codes        :      SW.


151 Company      :      SUR SOFTWARE
    Address      :      Carlos Antúnez 2616 Of 12
    Phone        :      2319723' 2328895
    FAX          :

    Executives   :      Nicolás Martelli R.   Gerente

    Codes        :      SW,SVCS.


152 Company      :      SYNAPSIS S.A.
    Address      :      Santo Domingo 814
    Phone        :           6321240
    FAX          :      (562)6965999

    Executives   :      José Antonio Barros   Gerente de Proyectos

    Codes        :      HW, SW, SVCS.


153 Company      :      SYNTAX LTDA.
    Address      :      Apoquindo 4430 Loc 7
    Phone        :           2061496
    FAX          :      (562)2254338

    Executives   :      Bolívar Quiroga       Gerente

    Codes        :      HW.


154 Company      :      SYSCAL
    Address      :      Manuel Antonio Prieto 0148
    Phone        :           346091
    FAX          :      (562)2227120

    Executives   :      Néstor Manríquez      Gerente General

    Codes        :      HW,SW.
```

```
155 Company      :      SYSCOP S.A.
    Address      :      José Miguel de la Barra 544
    Phone        :           336256
    FAX          :      (562)336256

    Executives   :      Gerardo Olguin        Gerente Comercial
                        Gregorio Preller      Gerente

    Codes        :      HW,SW.


156 Company      :      SZISOFT LTDA.
    Address      :      Av 11 de Sept 2260 of 151
    Phone        :          2322009
    FAX          :      (562)2322009

    Executives   :      Isaías Szigeti D.              Gerente Gen

    Codes        :      SW.



157 Company      :      TAKUN INVERSIONES S.A.
    Address      :      Viña del Mar 7, Providencia Stgo.
    Phone        :           345922
    FAX          :      (562)2227932

    Executives   :      Pia Ceppi Schacht     Gerente Informatica

    Codes        :      SW.



158 Company      :      TELEDATA
    Address      :      Vecinal 90
    Phone        :          2467927
    FAX          :      (562)2467928

    Executives   :      Carlos Newmann S.     Gerente Computación

    Codes        :      COMPUT.



159 Company      :      TERABYTE LTDA.
    Address      :      La Concepción 80, loc 2
    Phone        :      2745185 2253127
    FAX          :      (562)494743

    Executives   :      Adolfo Casari G       Gerente Comercial

    Codes        :      SW , SVCS.
```

```
160 Company      :      TESIS S.A.
    Address      :      Miraflores 590 of 6
    Phone        :      330080, 6321037
    FAX          :      (562)6321249, 2225830

    Codes        :      Comput.,HW.


161 Company      :      THAM S.A.
    Address      :      Av. Isidora Goyenechea 3199 Piso 2
    Phone        :      2330481, 2321428
    FAX          :

    Executives   :      Elba Bocchieri         Hardware
                        Guillermo Muñoz        Software

    Codes        :      HW, SW,SVCS.


162 Company      :      UNISYS CHILE CORP.
    Address      :      Los Leones 325
    Phone        :           2312100
    FAX          :      (562)2314284

    Executives   :      Terence Cook           Director Comercial

    Codes        :      HW,SW,SVCS.


163 Company      :      UNYSOFT LTDA.
    Address      :      Providencia 2392 Of 502
    Phone        :      2327672,2331302
    FAX          :      (562)2319108

    Executives   :      Eduardo Quinlan Carey

    Codes        :      SW.


164 Company      :      UPGRADE CHILE S.A.
    Address      :      Eliodoro Yañez 1789
    Phone        :           44230
    FAX          :      (562)2513706

    Executives   :      Roberto Inzunza B.     Gerente General
                        Gonzalo Inzunza B.     Gerente Mktg.

    Codes        :      HW,SW,SVCS.
```

```
165 Company     :     WORDPERFECT CHILE
    Address     :     Pedro de Valdivia 176
    Phone       :          2336898
    FAX         :     (562)2332611

    Executives  :     Carlos Galán        Gerente General.

    Codes       :     SW


166 Company     :     WORD SOLUTION CHILE LTDA.
    Address     :     San Antonio 527 of 29
    Phone       :          336451
    FAX         :

    Executives  :     J. Carlos Morales P. Gerente Comercial

    Codes       :     COMPUT.


167 Company     :     XEROX DE CHILE S.A.
    Address     :     Alcántara 30
    Phone       :          2460306
    FAX         :     (562)2081438

    Executives  :     Marco A. Muñoz H.    Director Mktg.

    Codes       :     HW,SW,SVCS.
```

```
        IBM DEALER DIRECTORY
        FOR AS-400

Santiago:

DEALER :                ADDRESS                        PHONE NBR


Contact Ingenieros   Bilbao 2921                        497663

MEKANO Equipos       Magallanes 011                     371831

Pragma               Huelén 75, depto.21                 44624

Procesac             Moneda 1137, Piso 3               6970013

SIGE Acesores        Galvarino Gallardo 1724           2235303

SIGMA                Estado 337, Piso 10                394993

Skills Consultores   Huérfanos 863, Piso 4             383023

Sisteco              Vecinal 40                        2341644

ST Computación       Génova 2086                       2514571

Antofagasta :

CODECOM - Chile      Washington 2577                    227437

Valparaíso :

Ingeniería de Soft.  Pudeto 351, of.7

Concepción :

TASCO                Av. Lib. B.O'Higgins 1068          230304

Temuco:

Opciones             Bulnes 314, of.28                  213797

Puerto Montt :

Opciones             Talca 128, piso 2                  255553
```

IBM DEALER DIRECTORY
FOR PS-2.

Santiago:

| DEALER : | ADDRESS | PHONE NBR |
|---|---|---|
| CONDE | Huérfanos 1160, of.1103 | 6957303 |
| Computerland | Sta. María 2560 | 2514001 |
| Oficentro | Tobalaba 278<br>Ahumada 109 | 710836 |
| Sisteco | Vecinal 40 | 2341644 |
| ST Computación | Génova 2086 | 2514571 |

Concepción :

| TASCO | Av. Lib. B.O'Higgins 1068 | 230304 |
|---|---|---|

## 2.3.   Professional Associations

### 2.3.1.   A.C.S.: Chilean Software Association.

It was created in 1986, with the purpose of furthering the level of knowledge on software and the development of software.  It groups 35 of the largest and most important companies in the industry.  Members pay dues to the association according to the number of specialists that work exclusively in software design, programming or development.  This criteria gives rise to the following categories:

- "Large" company:firms with more than 10 software specialists.
- "Middle-size" company: firms with 5 to 6 software specialists.
- "Small" company: firms with less than 5 specialists.

A list of all ACS members is included with the Directory, in this report.

The largest companies in the association are IBM, UNYSIS, Orden, Sisteco, Softland and ASICOM (AISOFT).

The Association works in three areas:

- Software Exports:  This task is assigned to the Committee of Software Exporting firms, that works in joint-effort with PROCHILE, the government export office.  The Committee is responsible for generating an export product catalog, a periodic news page, the organization of chilean software fairs and events, and the participation and presentation of products of member firms at international events such as COMDEX and CEBIT.

- Develop new markets for software in Chile, by increasing the visibility of firms participating in the industry.

- Take part in international meetings, conferences and government events on software in order to take an active role in the design of regulations for the sector.

### 2.3.2. A.D.S.: Software Distributor Association.

It groups the distributors of imported standard packaged software, none of which participate in any of the other professional association. The only participant that has a branch office in Chile is Word Perfect. Its most relevant members are Lotus, Ashton Tate, Borland and Word Perfect. Some important members are Microcomputadores, a SONDA company, that represents Ashton Tate and Lotus; Success, which represents Borland, Quattro, Turbo C and Turbo Pascal and others, Microsoft (joint venture of Microsoft Chile and "Quinta Generacion" group), and Word Perfect, a chilean branch of WP USA.

The main objective of the ADS is software protection. At present the ADS is carrying out a massive advertising campaign to warn illegal software users of their crime.

Importers can be grouped by the type of hardware they specialize in.

- Software for Microcomputers: The main one is Microsoft. In this group are also Borland, Lotus, WP, Oracle and others.

- Software for Mainframes: Etica (the largest one), COMSOFT, Oracle, others.

- UNIX software: See chapter 2.1. on UNIX.

### 2.3.3. Comité de Empresas Exportadoras de Software: Committee of Software Exporting Companies

Companies: It groups 15 chilean software exporters.
President: Jaime Altamirano (General Manager of Sistema Integrales)
Vice-President: Pablo Daniel Palma (General Manager, ARS INNOVANDI).

Its main objective is to promote exports of chilean software abroad.

Some member firms include:

1. Sistemas Integrales
2. Ars Innovandi
3. Binaria
4. Synapsis
5. Sonda
6. Emergency 24
7. Autys
8. Softland

### 2.3.4. ACHEI: Asociacion Chilena de Empresas de Informatica. Chilean Association of Computer Related Companies.

It was founded in June of 1984.

The main objective of this group is to verify that trade and marketing of computer solutions are as transparent as possible, and to provide a valid spokesman for the industry vis a vis the government.

It groups the main suppliers of computer and communication systems. Many ACHEI participants define themselves as providers of computer "solutions", that is the combination of hardware, software and consulting services. Its 34 members account for more than 95% of the local supply of hardware, software and consulting. There is only a slight overlap with ACS membership, since 4 member firms of ACHEI also belong to ACS. This latter association is more directly related to software development.

## MEMBER FIRMS OF ACS

1. ARS INNOVANDI S.A.
   Sr. Pablo Palma Keller                                        231-19-36
   Providencia 2184 Piso 3

2. AISOFT
   Sr. Guillermo Alee                                            231-81-49
   Los Conquistadores 1700 Piso 17B

3. BIGSA S.A.
   Sr. Roberto Hirsch                                            232-03-23
   Francisco Noguera 41 Piso 4

4. BROWSE LTDA.
   Sr. Francisco Petour                                          46-09-21
   Huelén 85 Of. 3

5. CENTRO INTEGRADOR DE DATOS
   Sr. Eduardo Baeza                                             227-54-81
   Irarrázabal 5119

6. COMSOFT LTDA.
   Sr. José Icaza N.                                             223-10-95
   Antonio Varas 806

7. CONDE S.A.
   Sr. Italo Bozzi                                               695-73-03
   Huérfanos 1160 Of. 1103

8. CONSULTORES ASOCIADOS ELLIOTT Y CIA. LTDA.
   Sr. Jorge Elliott S.                                          695-30-15
   Nataniel Cox 402 Of. 33

9.  DECISION INTEGRAL DE SOLUCIONES
    AVANZADAS S.A. - DISA
        Sr. Jorge Fuenzalida                          246-28-48
        Rosario Sur 103

10. DISEÑO SOFTWARE LTDA.
        Sr. Carlos Prieto M.                          274-21-77
        Tucapel 0293

11. EMERGENCY 24
        Sr. Germán Vicencio                           222-91-00
        Carabineros de Chile 72

12. ETICCA S.A.
        Sr. Giovanni Musso                            231-19-36
        Providencia 2184 Piso 2

13. GESTION S.A.
        Sr. Alfredo Martic                            34-10-10
        Diez de Julio 363 A

14. GONZALEZ MAIER, RICARDO
        J.M. Infante 22                               225-08-80

15. I.B.M. DE CHILE
        Sr. Claudio Guzmán                            33-44-00
        Providencia 655

16. IDEA INGENIEROS DE EMPRESAS ASOCIADOS
        Sr. Francisco Di Biase                        33-03-29
        Merced 136 Of. 61

17. INFORMAT
        Sr. Bernardo Segura                           225-93-10
        Bilbao 3020

18. INGEVAL
        Sr. Andrés del Valle                          231-63-90
        Hernando de Aguirre 11 Of. H

19. LOGISCOMP LTDA.
     Sr. Hugo Ortiz V.                                     681-64-38
     Chacabuco 4-B Piso 3

20. NETCO LTDA.
     Sr. Oscar Núñez V.                                    33-17-74
     Diagonal Paraguay 458 Piso 2

21. OPTIMISA S.A.
     Sr. Alfredo Piquer                                    49-03-36
     Eliodoro Yáñez 890

22. ORACLE S.A.
     Sr. Gustavo Prilick                                   231-91-18
     Marchant Pereira 10 Piso 17

23. ORDEN S.A.
     Sr. Rocco Abiuso                                      696-87-02
     Huérfanos 1052 Piso 13

24. PINEDO INGENIEROS
     Sr. Juan Luis Pinedo                                  696-19-91
     Huérfanos 1373 Of. 1204

25. REDCOM CHILE
     Sr. Bernardo Andrews                                  4-30-54
     Obispo Donoso 9-A

26. ROYCO COMPUTACION
     Sr. Luis Ropert                                       71-78-17
     Agustinas 972 Of. 801

27. SISTEMAS INTEGRALES
     Sr. Jaime Altamirano                                  38-18-41
     José Miguel de la Barra 412 Piso 4

28. SISTECO
     Sr. León Michelow                                     234-16-44
     Vecinal 40

29. SOFTLAND LTDA.
    Sr. Luis A. Erazo                                    4-01-00
    Séptimo de Línea 1247

30. SYNAPSIS S.A.
    Sr. Víctor Hugo Muñoz                                696-90-83
    Santo Domingo 1141

31. TOURGEON
    Sr. José S. Carrasco                                 274-73-46
    Hernando de Aguirre 1620

32. TREWHELA, MARIO
    Huérfanos 886 Of. 905                                39-21-53

33. UNISYS (CHILE) CORPORATION
    Sr. Alfonso Galleguillos                             231-21-00
    Los Leones 325

34. UNYSOFT LTDA.
    Sr. Eduardo Quinlan C.                               232-76-72
    Providencia 2392 Of. 502

35. WINTEX LTDA.
    Sr. Patricio Bravo                                   695-25-11
    Alameda 1146 Of. 202

Chapter 3: **THE SOFTWARE MARKET IN CHILE**

## 3.0. General Industry Overview

The software industry in Chile is characterized by the presence of almost all the largest international computer companies, either directly ( IBM, NCR and others) or through distributors (SONDA DIGITAL).

Also, it is difficult to separate the hardware from the software, since an important segment of software products are oriented to the basic operation of computers ( operating systems, and utility packages).

One software classification groups the applications with the following criteria:

- Operating Systems (DOS,UNIX)
- Specific Software ( Accounting, production , etc.)
- General Use SW ( Dbase,Lotus,CSS)
- Utility Packages ( PCTools, Editors)

Since most respondents emphasized the growing tendency to use UNIX in Chile, we have dedicated a part of this chapter to its analysis.

## 3.1. The UNIX Operating System

The operating System (O.S.) of a computer is the basic software which allows the user to interact with the hardware. In this area, the war between open and proprietary systems continues. Due to its excellence Unix has become the open system of choice thanks to its efficiency, portability and compatibility. Twenty years after its creation, and after having been the standard operating system at the academic level, Unix had now begun to conquer the other market segments as well. In the mean time, the proprietary systems of the big companies continue thanks to their captive markets or their specific applications (i.e. commercial applications).

The various applications of Unix in the market, range from microcomputers (for example, Xenix) to mainframes. All of these are based on the System V of AT & T or on the Berkeley 4.3 of the University of California. At present, there is a strong standarization effort among all implementations.

### 3.1.1. UNIX Users in Chile

As in the rest of the world, Higher Education has been the sector that has developed the technology to its greatest extent, in an effort to have the same tool available in the nation as in similar institutions abroad.

The remaining areas that have begun to operate with UNIX, not as a result of specific decisions on open systems, but rather as a consequence of the sales efforts from hardware suppliers, who at a given moment decide to promote hardware that runs on Unix operating systems instead of other alternatives. NCR is the best example of this since it decided to give up its line of I equipment to replace it by the Unix line, that is, Unix based.

Thus, currently there are UNIX devices in various activity sectors, without there being a marked tendency in any one of them. One exception is the case of fruit export companies where almost all information is processed by UNIX hardware.

Other segments where UNiX equipment can be found are:

- Government and Municipalities
- Health Institutions and Health Services
- Financial Institutions
- Trade (Retail & Wholesale)
- Industrial Companies
- Mining Companies
- Other sectors

At the higher education levels nearly all universities and higher education institutions have UNIX equipment available. Some examples of these are: Universidad de Chile, Universidad Católica de Chile, Universidad de Santiago, Universidad Federico Santa María, Universidad Andrés Bello, Universidad del Norte, Universidad de Tarapacá, Universidad de la Frontera etc., and also the Institute Campus and CIISA.

In the Government sector, UNIX is present in SENCE (National Training and Employment Service), the Superintendency of Pension Fund Associations (Superintendencia AFP), INDAP (Institute for Agro Fish Development) and the Municipalities of Santiago, Estación Central, Providencia and the Justice Department, among others.

In the health sector, Santa María Clinic, the Laboratories Durandin, Profarma and Astorga, among others, operate with UNIX devices.

There are UNIX devices in the Financial Sector as well, such as at Banco de Chile, Banco Osorno, Banco de Santiago, Banco Continental, Inversiones Errázuriz, etc.

In the business sector are: Corona Department Store, Comercial Estado, Hertz Rent Car, Rolec, Gacel Shoe Stores, etc.

UNIX is also used in the industrial sector such as in Dos en Uno Confectionary (LQL), Inchalam, Compac, etc.

The mining companies, Minera Las Cenizas, Minera Mantos de Oro and CODELCO are examples of UNIX installations in the mining sector.

Finally, it is worth mentioning that there are also UNIX devices at companies such as Sheraton Hotel, Edwards y Cerutti, FRUPAC, Ultramar Shipping Company, United Trade Company, ORDEN, SYNAPSIS, OPTIMISA, Pehuenche, etc.

### 3.1.2. UNIX Software available in Chile

The variety of UNIX software available in Chile is not as wide as the hardware supply. This occurs as not all UNIX software corporations have active agents in Chile. Despite this, principal packages have agents and many others are directly offered by hardware representatives.

The main Data Base and fourth generation packages such as, ORACLE, INFORMIX and UNIFY have agents who supply local maintenance as well as sales.

XENIX and PV/IX Operating System (by Santa Cruz Operation and Interactive Systems, accordingly) for personal computers based on Intel line processors also have agents in the nation providing local maintenance apart from their sales activities.

Wordperfect for word processing is also available for UNIX and is distributed in Chile by its agent.

On the other hand, nearly all local software corporations are ready to construct applications on request to be used in UNIX devices. They generally use fourth generation languages such as, ORACLE or INFORMIX as support.

### 3.1.3. Principal Applications

Due to the market's incipient nature, there are still no evident applications in UNIX devices. However, there are some banks where UNIX equipment is used to perform exchange processes by controlling specialized magnetic character equipment.

The Superintendency of Pension Fund Associations (Superintendencia de AFP) controls all aspects of the new Pension System by means of a network of 3 UNIX computers.

A similar situation occurs with INDAP (Institute for Agricultural and Livestock Development) which has over 50 UNIX computers.

The Real Estate Registry Office in Santiago keeps a record and index of documents in computers operating with a UNIX Operating System.

### 3.1.4. UNIX versions in Chile

Most of the various UNIX versions available in Chile are listed in the following table:

**Companies that supply UNIX in Chile**

| UNIX Version | Supplier (Distributor) |
|---|---|
| 1. AIX | IBM |
| 2. SCO Xenix/386 | TASCO |
| 3. SCO Xenix/386 | TASCO |
| | SISCLONE CACHE (SISTECO) |
| 4. SCO Xenix/286 | TASCO |
| 5. Unysis System V | UNYSIS |
| 6. DG/UX | DATA GENERAL |
| 7. HP-UX TASCO | Hewlet Packard (ASC) |
| 8. A/UX | Apple |
| 9. ULTRIX | Digital (Sonda) |
| 10. Texas Instruments System V | Texas Instruments (Sistemas Digitales) |
| 11. UNIX System V | N.C.R. |
| 12. REALIX | Modcomp (Rimpex) |
| 13. 386/IX | Interactive (Upgrade) |
| 14. DYNIX | Sun Mycrosystems (Sisteco) |
| 16. ALTOS SYSTEM V | ALTOS |
| 17. TOWER O.S. | N.C.R. |
| 18. DOMAIN/O.S. | Apollo (Rimpex) |

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The UNIX versions of Sun and DEC equipment (Sun/OS and ULTRIX) are based on the BSD 4.2 and 4.3 standards, however they partially incorporate System V function, especially library routines and Operating System requests.

The remaining versions, that is, HP-UX, DG-UX, Tower/OS, UNYSIS System V, etc., are all quite similar and are based on the System V Release 2x and 3x. All of them incorporate the best of the BSD distribution, especially HP-UX and DG-UX.

### 3.1.5. Legal Framework for UNIX

**Legislation and Binary Licenses**

UNIX's case is not different to that of the rest of the software industry in Chile and has the same protection as the rest of the software products.

However, the situation with UNIX is much easier to control than the problem with personal computers. In the first place, we are dealing with large equipment whose use and applications are generally known by suppliers. Secondly, when using different processors and different UNIX versions only the programmes can be directly transferred to devices from the same line and supplier.

The main impediment for Chilean Universities to operate with UNIX was that Western Electric original Unix developer (Subsidiary of AT & T), the dealer for UNIX in the past, only sold equipment with the source code but doubted about the copyright protection it would receive in Latin America.

Later, UNIX was redesigned so that the source code would not have to be given and thus created sublicenses for access to the binary code. To date, no user in Chile is known to have access to the source code, since all licenses have restricted access to the binary code.

### 3.1.6    Future Opportunities of UNIX Software in Chile

In terms of Open Systems versus Proprietary Systems trends, Chile should follow the world tendency of greatly  increasing UNIX use.

According to estimates, we can expect a strong increase in all sectors as a consequence of the following:

-    Universities will continue to train professionals prepared at UNIX who will urge the replacement of closed systems as they fill positions of greater responsability.

-    With the exception of the larger suppliers, the rest shall promote UNIX and open systems in general as part of their main business strategy.  Small-scale suppliers (and in the long run large scale suppliers as well) will not be able to bear development costs of propietary technologies which, in the case of multi-user devices, will strongly encourage UNIX as a solution.

-    Due to pressure from suppliers and experience from the first UNIX users, other users will also become interested in the subject.  Many of them will be able to value the advantages of breaking ties with closed technologies and shall begin to plan their transition.

-    Finally, application consultants and developers are also likely to promote UNIX.  The experience gathered from working with Operating Systems and applications that have been developed can be transferred to all companies working with UNIX.  Consequently, these professionals can increase their field of scope without the need to change their systems nor learn other technologies.

## 3.2. Demand Variables

There has been a strong increase in the demand of software due the rapid expansion of hardware use in all kinds of human activities and the considerable decrease in costs of computers as a consequence of technological innovations and new production methods.

As a response to such demand, the leading software dealers engaged a great number of man hours in researching products that would satisfy user needs and the same time make the best of the current technology. With time, software has become a key expenditure item for companies who intend to automize an organization. As an example, it is worth noting that for each AT PC sold by a hardware supplier, approximately 60 % of its value corresponds to software (Operating System, Utilities, Worksheet and Word Processor).

### 3.2.1. Hardware Platform

The type of existing software can also be categorized according to hardware platform it uses.

(a)    Personal Computers:
-    IBM compatibles
-    Apple MacIntosh
-    Multiuser software for Local Area Networks, which overlaps with software for multiuser equipment.

(b)    Minicomputers:
-    UNIX equipment
-    Multiuser midrange equipment with proprietary architecture.

Software developed in Chile in this category covers mostly UNIX and some software developed for AS 400.

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There is a business opportunity in the entry into software supply in the minicomputer category.

(c)   Mainframes:

Almost all the software for this category is imported, and there is demand for special systems which are discussed further on.

Some local development has been conducted for IBM 390 equipment.

Mainframes conform a heterogeneous market, and each system is a separate reality.

(d)   Special Purpose Computers:

These are specific market niches for specific uses, such as automatic control process, fault-tolerant equipment (such as Stratus/IBM 88 which handle ON-2 share financial systems, and Tandem). The software for this segment is oriented to systems integration.

### 3.2.2. Sector Analysis

(a)   Mining sector:

There is a growing use of workstations, replacing Mainframes. Engineering processes are handled mostly on workstations, because of substantial advantages in maintenance costs, higher processing speed, and increased productivity. Mainframes are used for the administrative functions.

This switch is creating a strong demand for software to be used in workstations. This is the case of CODELCO, the national copper mine.

Some experimental work is carried out in this field by Sonda, Synapsis and the Universidad Santa María.

In Chile, there aren't companies that develop specialized software for the mining sector as their main product.

Software opportunities in this field include automatic control systems, operations planning and programming, simulations, reserves calculations and a number of engineering processes.

This software involves high complex technology. This complexity causes their implementation to be slow given the information and training requirements.

The planning software is usually operated by Mining engineers and the production software by Mechanical engineers.

Some of the companies that import software in this sector include:

- NCL, a company that represents MINCOM
- RTZ, a company that specializes in mining prospection software.
- M and C, dedicated to planning software.

There is great interest at present in many local and international suppliers to enter this segment. As a point of interest, MINCOM, the world leader in mining operations software, will create a direct branch in Chile.


(b)     Geographical Information Systems:(GIS)


This is an image processor which combines information in different planes.(For instance, irrigation, rivers, type of harvest, etc.).

There is an interest in companies in the mining, forestry, industrial fisheries, oceanograhpy and agroindustrial sectors for this type of software.

A present, there is an experimental project under way, with the joint efforts of NASA in Chile, CONAF and CIREN, two government entities dedicated to natural resources administration.

The project involves the monitoring of a large expanse of agricultural terrain in the southern 9th Region of Chile, to verify aspects such as forest fires,volcanic eruptions, water contamination, and other variables.

The suppliers at present of GIS in Chile include Sonda, with PAMAP; and INCOM, (Ingenac) which distributes ARC-INFO of ESRI, USA.

This software was introduced about three years ago and it is an area of rapid growth. The cost of the software is about US$60.000. (Arc-info). Thus, the software decision conditions the purchase of the hardware, since in this case a workstation to run the program has an estimated price of US$35.000.

(c)     Communications:

There is a trend toward data digitalization and satellite communications, and towards multimedia integrated services (voice, text and image).

There is a demand for systems of automized servicing, for the development of intelligent stations, and for administrative information and control systems. Also, the sector is an important consumer of software programming and development tools, and is also beginning to analyze Geographical Information Systems.

Companies use Local Area Networks and Digital Networks.

There is a strong tendency in the sector towards open systems.

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(d)     Insurance companies, Pension Funds and Health Maintenance Organizations: (HMO)

This sector is characterized by the large volume of data that it handles. Its operational problem causes it to always demand software to process vast data.

This need has motivated pension funds to develop their own software, and has geared two local software suppliers, Sonda and Synapsis to develop specialized software for this segment.

The opportunities in the sector are mainly in advanced data base software, and in the management systems, where office automation is still at a beginning level.

Also, the Pension Fund System is beginning to have the problem of handling retirees who demand periodic payments and pension fund benefits, and the necessary software is not yet available.

Thus, the opportunities lie in the self-service possibilities of the pension fund system and in a software for retiree management.

Insurance companies require customized software, and the adapting of existing systems is so costly that most companies develop their own software. There is a pervading requirement for speed in processing and data recuperation in this market segment.

(e)     Financial Institutions:

There is a need to increase automizing of end-user banking centers (Automatic teller machines, terminals in supermarkets, shopping centers, etc.) which emphasize the graphic interface with the terminals.

There is a change in hardware platforms towards more open systems and UNIX.

The "client-server" model is applied as well as networks.

There is a demand for programming tools and a trend toward multimedia use.

There is intense internal software development due to the difficulty in adapting foreign packages which do not consider the legal banking framework in Chile. However, the areas in banks where software is required are:

- Foreign Trade
- Investment handling
- Intermediary services
- Document Custody
- Specific software such as credit risk analysis

(f) Industrial Sector (Production, Manufacturing)

This sector demands automated control processing.

The trend is toward the use of MILL-WIDE software to allow the integrated administration of production plants. All existing packages are imported, and there is a change from process control to mill-wide integrated control which allows automized operation, and the control of input and output processes.

The food industry is a large potential customer of this software, in companies such a IANSA (National Beet Sugar Company), Dairy companies, and Lever Chile (detergents, edible fats, etc.).

Another area of software demand in the sector is the "expert shells". (An expert shell is a generator of knowledge through heuristics).

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(g)     Educational Sector:

It is a large user of Operational systems, compilers and communications systems as well as advanced programming tools.

(h)     Other sectors:

There is demand for expert shells in segments such as supermarkets, credit analysis in banking, and expert maintenance systems in mining and paper mills.

In the hotel segment, there is a potential business opportunity for all the In-Room systems and services some of which are offered on an international level by SpectraVision. These services contemplate the usage of the room's television set as a two-way communication channel between the hotel and the guest for varied purposes, such as check out and bill payment, request of room service and others. Hotels also require locking systems software with security devices, administrative software such as payroll handling, assistance and attendance control systems and general administrative software.

The most visible opportunity in the hotel sector lies in the middle size hotel segment, which has experienced an impressive growth in the last three years in Chile. This segment needs a hotel administration software that would run on local area networks of PC's, with 6 or less terminals.

In private hospitals there is the opportunity for the use of software for medical purposes. For instance, a pharmacological software which would allow drug cross evaluation. These types of specific packages are not available at present.

(i)     Government Sector:

The different ministries and organizations have a permanent demand for efficient information retrieval systems.

Recently, for example an IBM software package named STAIRS, which is an efficient information retrieval system, was purchased for Congress.  However, there is ample opportunity for other packages of this type and for data base software.

This sector is looking for portable open-system solutions, which do not tie the user to a specific hardware platform.

In general, we observed:

.    General need for Executive Information Systems.
.    Trend towards open systems and portable systems, searching for an independence of the hardware platforms, greater functionality and speed and lower cost.

## 3.3.    Legislation on Software Production and Use

In Chile, until recently the market tended to operate with illegal copies of software since there was no law of copyright protection.  A couple of years ago, in 1989, a strong temporary demand was generated when authorities published a general law on the subject as a result of legal actions taken by the agents of the leading software dealers, the majority of whose products have been copied (Lotus, Ashton Tate, Borland, Microsoft, etc.).

Aside of the strong sales increase experienced by agents, the most important effect of this action, which undoubtedly was the intention of suppliers, was that users became aware of their crime since software is a product with copyright of commercial value.  As a result,

the software market has grown considerably according to import figures, and it is expected to continue increasing due to greater solution requirements of users whose activities tend to become more and more automized.

Chile is a signatary of all the international agreements which protect intellectual ownership. Intellectual ownership is a right, defined in the article 27 of the Universal Declaration of Human Rights. This article differentiates between moral and patrimonial ownership. The moral right which recognizes the authorship of a work is not transferrable. The patrimonial right however, is subject to contracts. That is, an invention may be sold and the patrimonial right over the work is transferred, and the author loses all ownership rights.

### 3.3.1. Specific Legal Aspects:

(a)     Customs, Import and Export Tariffs.

The legal problems that arise in this area stem from the fact that chilean Customs have problems determining the value of software products and do not yet have specific regulations for software. At present, there is a tendency to confuse tangible with intangible goods for duties and customs regulations. Some regulations sustain that if a material product-such as hardware -is accompanied by intangible products, then these second products are ruled by the laws of tangible material goods, and pay only 11 % of duties. That is, compilers and operating systems that enter the country with the hardware are viewed as part of the physical product.

A data base however, cannot be considered with this approach since the value of it resides in the data it contains.

Intangibles tend to be charged the import/export duties of "consulting services" of 35%.

Customs groups software into three categories:
- Standard software
- Standard applications software
- Special applications software

Duties are payed according to this categorization. Standard software and standard applications software is associated to hardware and charged 11 %, while special applications software implies a consulting effort and it is charged 35 % duty.

(b)     Accounting Aspects.

The accounting treatment of software for depreciation purposes for instance, poses various legal conflicts. Clearly, the hardware is part of the physical assets of a firm and may be depreciated over the active life of the equipment, but the software may follow this treatment under Chilean law only if the hardware and the software were purchased together as a package.

If the software was bought separately or developed within the company, it must be treated as an expense and charged to the same period when the expense was incurred.

(c)     Foreign Exchange and Taxation Regulations:

The Central Bank of Chile seems to be decreasing its interest in participating in short-term exchange operation. It only requires that companies declare their profits and that the data should be consistent with taxation information. This makes systematic data on sales of software and services suspect, since imports and exports of software may be conducted in a disguised form due to Customs regulations. And the measurement of software sales and services (including customized software, systems support, timesharing, documentation, and data

base access) is made even more difficult by the parallel phenomena of consolidation and overall sector growth that are blurring the distinction between the software and service market segments. Software firms are expanding the service parts of their businesses, and service companies are increasingly stepping up their packaged software efforts in order to build stronger bases. Also, the electronic transfer of software via modems allows for an additional gateway for unregistered sales.

Furthermore, when importing software, any remittance of foreign currency for services payment purposes is charged a 35% duty. In the United States this payment is credited to the firm's tax debt. In Chile, there is no recognition of prior payments so the importer has to pay separately again for tax purposes. This situation is particularly so for software that is to be used in middle size computers and mainframes because this type of software is charged higher duties. It is thus common for importers to avoid officially declaring their imports (or exports).

(d)     Software Protection:

The property of software in Chile is regulated by Law Decree Nº17.336 which is the Intellectual Property Law approved on October 2 of 1970.

In 1990, a new law, Nº18.957 was passed which introduces changes in the Intellectual Property Law, and modifies article 76 Nº1 of Law Nº17.336, so that computer software is now formally susceptible to legal ownership.

Some of the more relevant articles in this law are the following:

.       Article 5, letter T: Defines computer programs and the copying of software programs.
.       Article 8 (second and third section): Identifies the owner of the program.
.       Article 10: Indicates that the protection of software lasts for 30 years.
.       Article 47: Describes exceptions with respect to security copies.

. Article 76: Defines the dues to be payed for the inscription of software, since the standard procedure is that they are reinscribed in Chile.
. Article 80, letter B: Describes felonies.

In general, the law suits ensued by the application of this law have not led to the imprisonment of the guilty parties but rather to an agreement between the parts, whereby the party sued pays the software company and formally promises to purchase the software.

### 3.3.2. Present and Future proposed Government Policies and Regulations for the Software Industry.

The government in Chile has inevitably become involved in information technology in general and in software in particular as buyer and user. Recently there is a project to centralize all government computer-related purchases in one decision center called D.A.E. (Dirección de Aprovisionamiento del Estado) the Governmental Purchasing Department which has functional dependence on the Ministry of Interior. A Law Decree specifies that the D.A.E. should centralize purchases of "supplies for computer solutions", a terminology which leaves unclear the scope of action of this Department.

The software supplier industry strongly objects to this government proposal for the following reasons:

- Each government entity, ministry or department is different, and therefore requires a different computer "solution".

- Information technology related purchases require highly trained specialists with expertise in their field, a resource which will not be available in the DAE.

- The persons in charge of purchasing decisions at the DAE would have excessive power over financial resources, and over suppliers. In the long run, this would be harmful to the government's interests.

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An example of the volume of resources involved in government purchases is the situation of the National Registry Office, which is functionally dependent from the Ministry of Justice. One of the respondents mentioned that this Office has been assigned funds from an international loan destined for the acquisition of computer equipment in government entities, and it has recently completed the first stage of purchases involving about US$ 8 Million.

Another example is Congress, that is acquiring new equipment and software with a loan of the Italian government.

The government has created a specialized task force to evaluate the software and hardware needs in the public sector. It is called the Grupo Informatico (Information Technology Group) and it is directed by Mr. German Quintana. The group is functionally dependent upon the Ministry of the Interior, and its offices are in the Moneda (seat of government building). One of the objectives of this group is the normalization of standards in the public sectors to achieve open systems.

The government organizations have a dire need for data base software, and information retrieval packages, however, there is a limited funding for these purposes.

Aside of the Intellectual Property Law geared to software protection, there is an absence of laws and regulations in this field. There is consensus in the industry however, that there is no need to legislate on the products, due to rapid obsolescence and ever-changing technology. Yet there is the need to regulate the use of information technology and to define the actions that imply a crime or offense. At present, a law project has been presented to Congress and it is still under discussion,with the definition of Computer Crime and its punishment. (Viera-Gallo Project).

This law proposes sanctions for offenses such as computer fraud, or unethical use of information.

Also ACHEI, the Chilean Association of information technology companies, has created a Code of Ethics to regulate the behavior of industry participants, protect free competition in the market, and create an instance of support and appeal for users of information technology products and services.

The Code of Ethics was approved in 1989 by ACHEI member firms.

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Chapter 4.        **SOFTWARE IMPORTS AND EXPORTS**

4.1.    <u>Software Imports</u>

The purpose of this report is to provide an estimate of the total software imports to Chile, their evolution and trends in the last three years including 1991.

The procedure applied consisted in collecting data from the Central Bank of Chile and General Customs Direction files respectively.

To be able to do an analysis in detail, the procedure consisted in separating the information collected into Units, Dollars, Brands and kind of software imported, for each year.

Limitations of the Study

The figures contained in this report reflect only part of the reality, due to existing distortions which are detailed  below :

Tariff  Problems:

The  11% tariff on the application software and the 35% tariff on specialized software, induce some importers to sometimes show items in the import declaration of the latter kind as an item of the former kind, so as to save the difference  by paying a lower tax.

Quantity imported:

Similarly, it is very difficult to control the real volume entering the country, because there are many softwares that are imported inside their own manuals; even more these products can be introduced electronically via phone modem.

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Information on standard software imports was prepared from official import records approved by Banco Central de Chile and Dirección General de Aduanas, for the years 1988, 1989, 1990 and 1991.

Through this period, 243,812 standard units wre imported to Chile, amounting to a total of US$ 40,329,000. In 1989 53,076 standard software units were imported, representing an 80.8 %, growth as compared with 1988 in which year 29,538 units were imported. In 1990 88,227 standard software units were imported, representing a 66% growth rate in comparison to the last season. Until June-1991 the imports accumulated for the year are 72,979 units with a projection of 102,059 units for the season.

In the coming years, the standard software market is expected to be in continued increase, at moderate decreasing rates, following the pattern of the previous three seasons. (See Chart).

# SOFTWARE IMPORTS

# UNITS 1988 — 1993



TOTAL UNITS IMPORTED

| | | | | | UNITS |

- 1988: 29,358
- 1989: 53,068
- 1990: 68,290
- *1991: 102,059
- *1992: 139,008
- *1993: 168,841

YEAR     ( * PROYECTED )
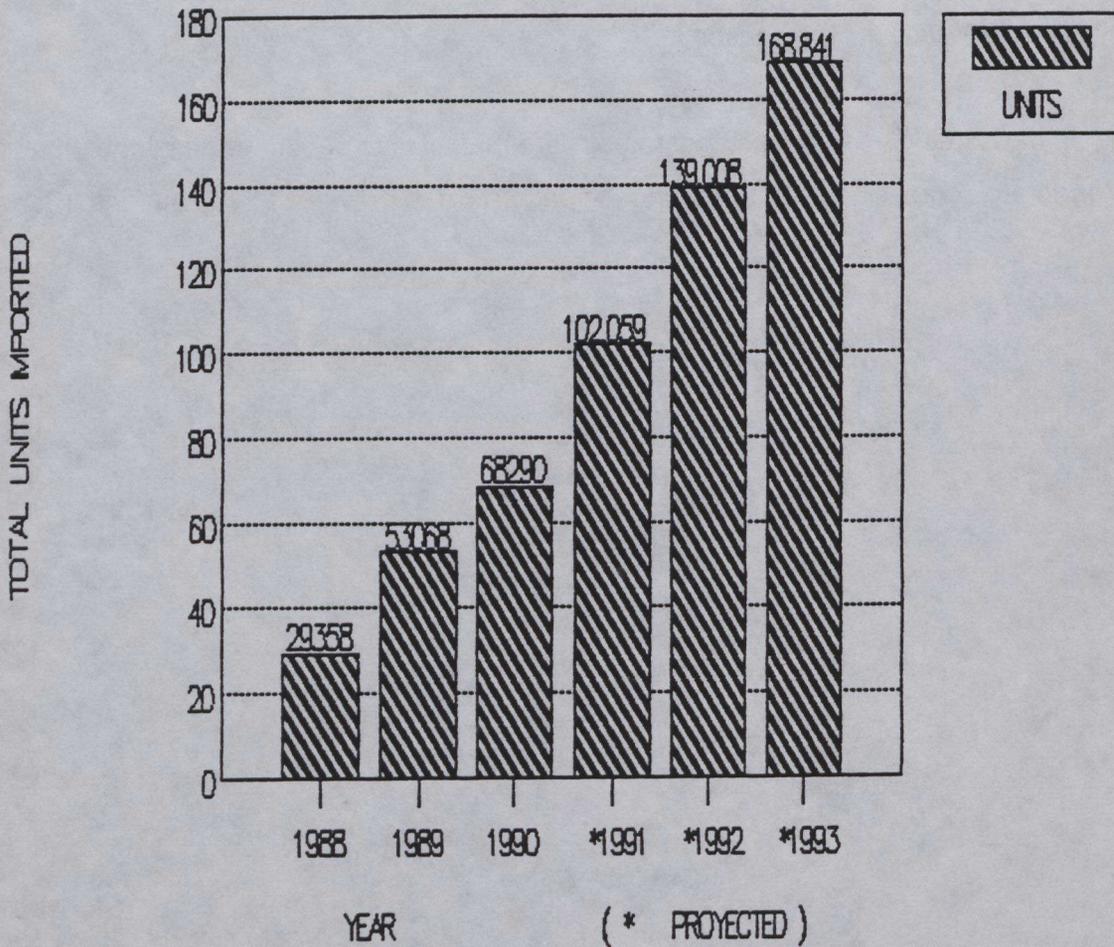
# SOFTWARE IMPORT (UNITS)

## MONTHLY BEHAVIOR 88 — 91

UNITS IMPORTED (Thousands)

25

20

15

10

5

0

J M M J S N J M M J S N J M M J S N J M M J
 F A J A O D F A J A O D F A J A O D F A J

1988     1989     1990     1991
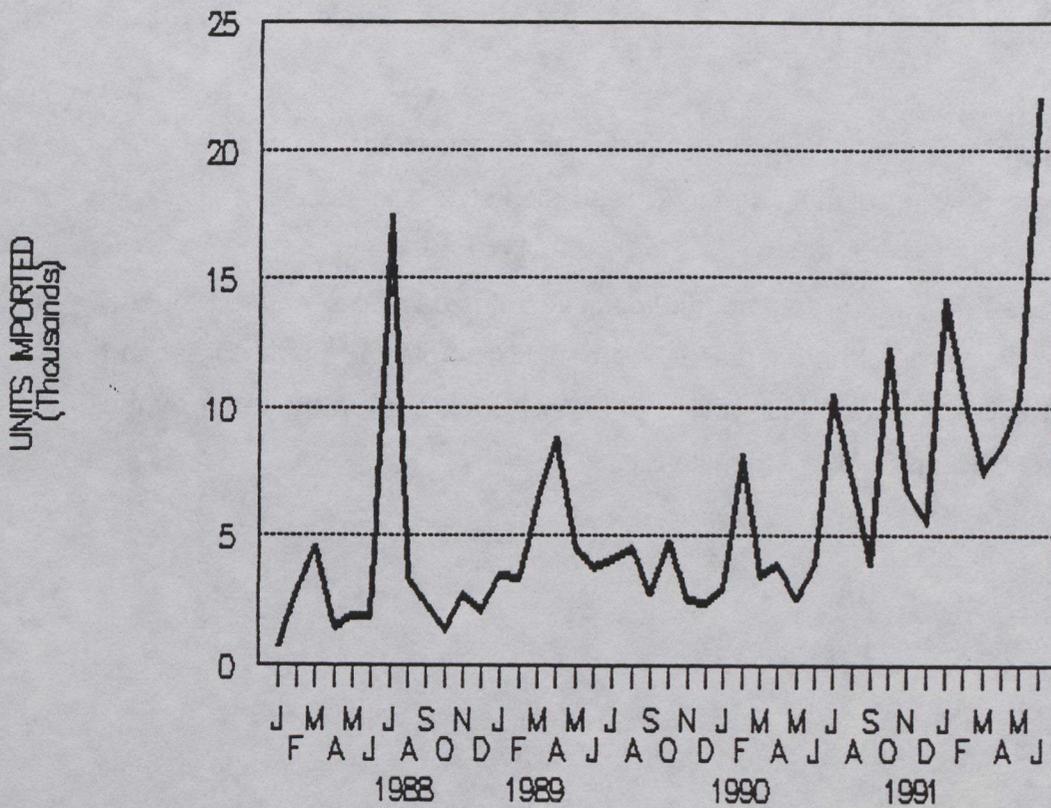
## IMPORT EVOLUTION IN THE FOUR LAST YEARS

| YEAR | UNITS | % VAR | US$ (Thousands) | % VAR |
|------|-------|-------|-----------------|-------|
| 1988 | 29538 | ---- | 9913 | ---- |
| 1989 | 53068 | +81% | 13691 | +38% |
| 1990 | 88227 | +66% | 11663 | -17% |
| 1991 | 102059 | +16% | 8099 | -30% |

The imports behavior in general reflects a constant increase in the quantity of units imported, showing a growing demand in the Chilean market.

Observing the total amount of dollars imported each year it is easy to see that the trend for the last seasons is towards the decrease. This could be explained on the one hand by the growth of the competition which results in lower prices, and on the other by the development of the Chilean Software industry.

1988

| MONTH | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| January | 719 | 2% | 548 | 6% |
| February | 2783 | 9% | 760 | 8% |
| March | 4648 | 16% | 994 | 10% |
| April | 1488 | 5% | 557 | 6% |
| May | 1837 | 6% | 1788 | 18% |
| June | 1880 | 6% | 642 | 6% |
| July | 4121 | 14% | 568 | 6% |
| August | 3311 | 11% | 707 | 7% |
| September | 2393 | 8% | 390 | 4% |
| October | 1362 | 5% | 932 | 9% |
| November | 2702 | 9% | 1142 | 12% |
| December | 2814 | 9% | 885 | 9% |
|  | 29538 | 100% | 9913 | 100% |

1988, the first year to be examined by this study, reveals interesting volumes of imports in units and dollars, with a great concentration of the market on the principal participants that will be analized in this report.

<u>1988 Principal Importers:</u>

There is no information available for 1988, but there is information for the other years.

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| PRINCIPAL BRANDS | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| IBM | 16544 | 56% | 6274 | 63% |
| MICROSOFT | 2593 | 9% | 262 | 3% |
| UNISYS | 1391 | 5% | 221 | 2% |
| BORLAND | 865 | 3% | 205 | 2% |
| NCR | 832 | 3% | 205 | 2% |
| OTHER | 7133 | 24% | 2809 | 29% |
| | 29358 | 100% | 9913 | 100% |

During 1988 IBM leads the market as a major brand present in it with a 56% of the units and a 63% of the total amount of dollars imported, in second place is Microsoft followed by Unisys, Borland and NCR. Other brands important are Lotus, Ashton Tate, Novell, Word Perfect, and Microsoft Intl. that are beginning to be present between the principal software demanded in the market.

1988 Principal Kind of Software Imported

| KIND OF SOFTWARE | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| APPLICATION | 7141 | 24 % | 4363 | 44 % |
| OPERATING SYSTEM | 5101 | 17 % | 448 | 5 % |
| DATA BASE | 3813 | 13 % | 728 | 7 % |
| UTILITARY | 2763 | 9 % | 577 | 6 % |
| LANGUAGE | 1562 | 5 % | 550 | 6 % |
| ELECTRONIC WORKSHEET | 1203 | 4 % | 256 | 3 % |
| WORD PROCESSOR | 1200 | 4 % | 291 | 3 % |
| OTHER | 6575 | 22 % | 2812 | 26 % |
| | 29.358 | 100 % | 9913 | 100 % |

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# 1988 SOFTWARE IMPORTS
## PRINCIPAL BRANDS (UNITS)

IBM (56%)

NCR (3%)

BORLAND (3%)

OTHER (24%)

UNISYS (5%)

MICROSOFT (9%)
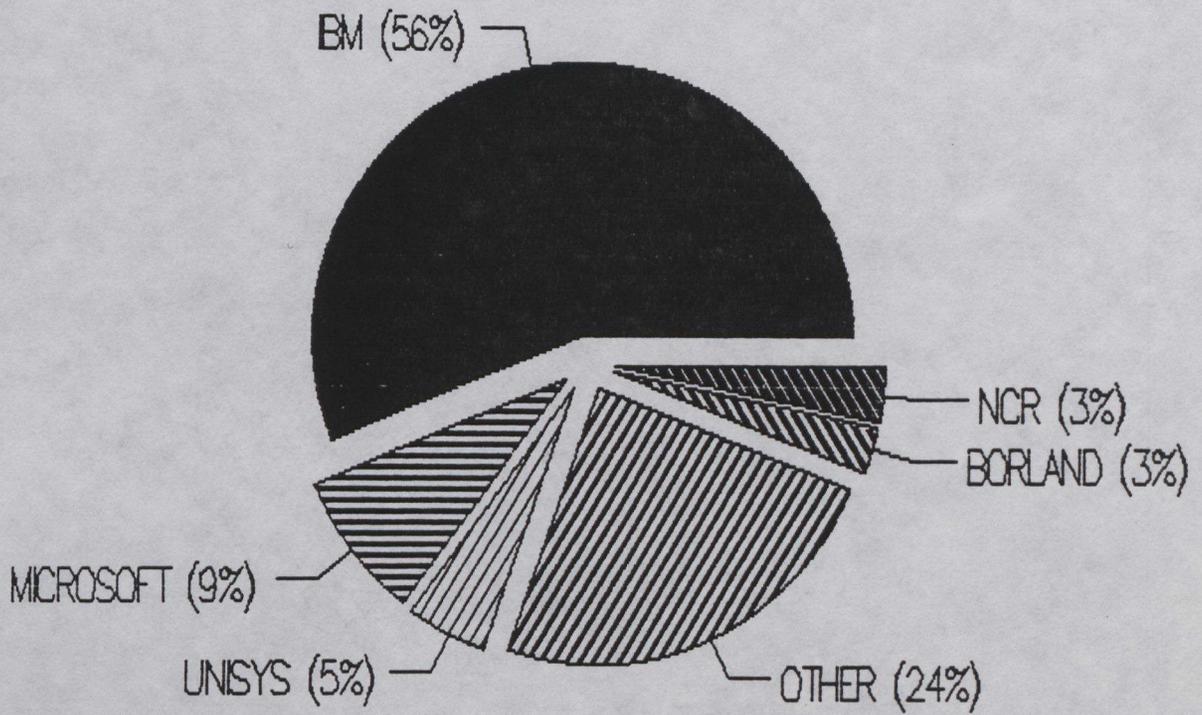
# 1988 IMPORTS
## KIND OF SOFTWARE (UNITS)

OPERATIVE SYSTEM (17%)

APPLICATION (24%)

DATA BASE (13%)

UTILITARY (9%)

OTHER (22%)

LANGUAGE (5%)

ELECTRONIC WORKSHEET (4%)

WORD PROCESSOR (4%)
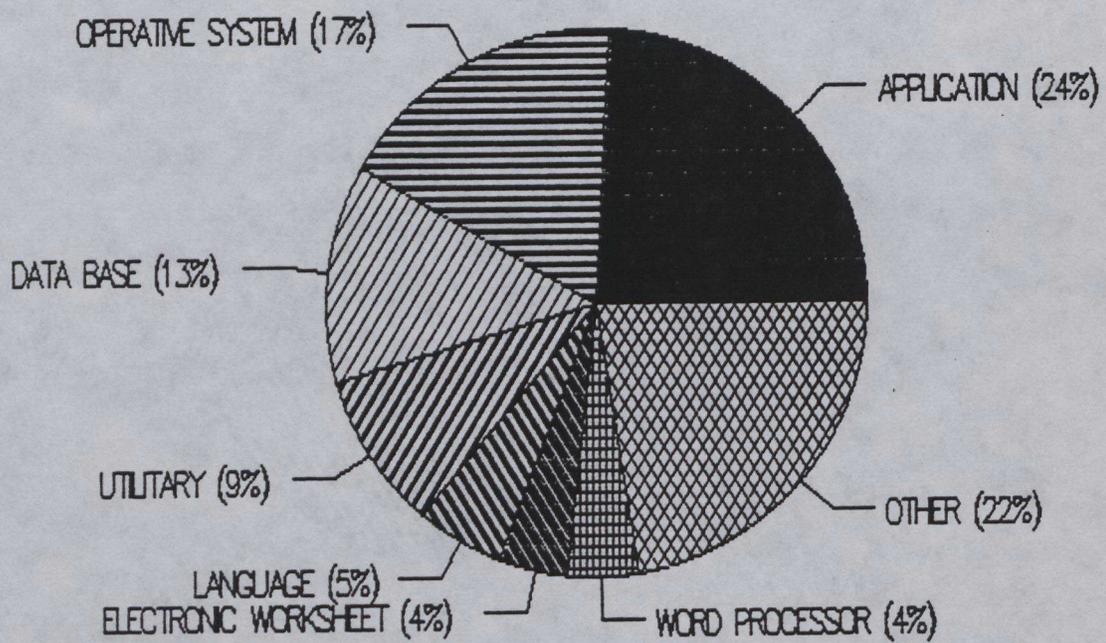
The principal kinds of software imported for 1988 are mainly Application with a 24% of the units and a 44% of the total amount of the dollars imported, in second place Operating Systems with a 17% of the units and a 5% of dollars, followed by Data Base Administrator with a 13% and a 7% respectively. Other important kind of software imported this season are Utility, Language, Electronic Worksheet and Word Processor.

1989

| MONTH | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| January | 3442 | 7 % | 2110 | 15 % |
| February | 3327 | 6 % | 926 | 7 % |
| March | 6390 | 12 % | 1079 | 8 % |
| April | 8822 | 17 % | 803 | 6 % |
| May | 4560 | 9 % | 1256 | 9 % |
| June | 3765 | 7 % | 1953 | 14 % |
| July | 4136 | 8 % | 1115 | 8 % |
| August | 4534 | 9 % | 952 | 7 % |
| September | 2705 | 5 % | 907 | 7 % |
| October | 4807 | 9 % | 892 | 7 % |
| November | 2474 | 5 % | 918 | 7 % |
| December | 4114 | 8 % | 679 | 5 % |
| | 53076 | 100% | 13690 | 100% |

During 1989 the increase of imported units was about 81% comparing with the previous season, and the amount of dollars was a 38 % more than 1988.

This year new competitors began to appear in the market, so the number of import operations was more considerable than other years.

1989  Main Importers

| COMPANY | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| IBM | 14346 | 27 % | 4109 | 30 % |
| SISTECO | 4251 | 8 % | 862 | 6 % |
| MICROCOMPUTADORES LTD. | 3989 | 8 % | 1100 | 8 % |
| A.S.C. | 3570 | 7 % | 360 | 10 % |
| OLIVETTI | 1970 | 4 % | 492 | 4 % |
| OTHER | 24950 | 46 % | 6767 | 49 % |
| | 53076 | 100% | 13690 | 100% |

The main importers of software take 54% of the market in units, and  51% of the total amount of dollars imported during this year.

IBM is leading the market with a 30% of total units imported, in second place is SISTECO and MICROCOMPUTADORES LTD., with  8% each , followed by A.S.C. with 7% and OLIVETTI with 4% respectively.

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# SOFTWARE     1989
## MAIN IMPORTERS (UNITS)

SISTECO S.A (8%)

MICROCOMPUT. LTDA (8%)

A.S.C. (7%)

OLIVETTI (4%)

IBM (27%)

OTHER (47%)
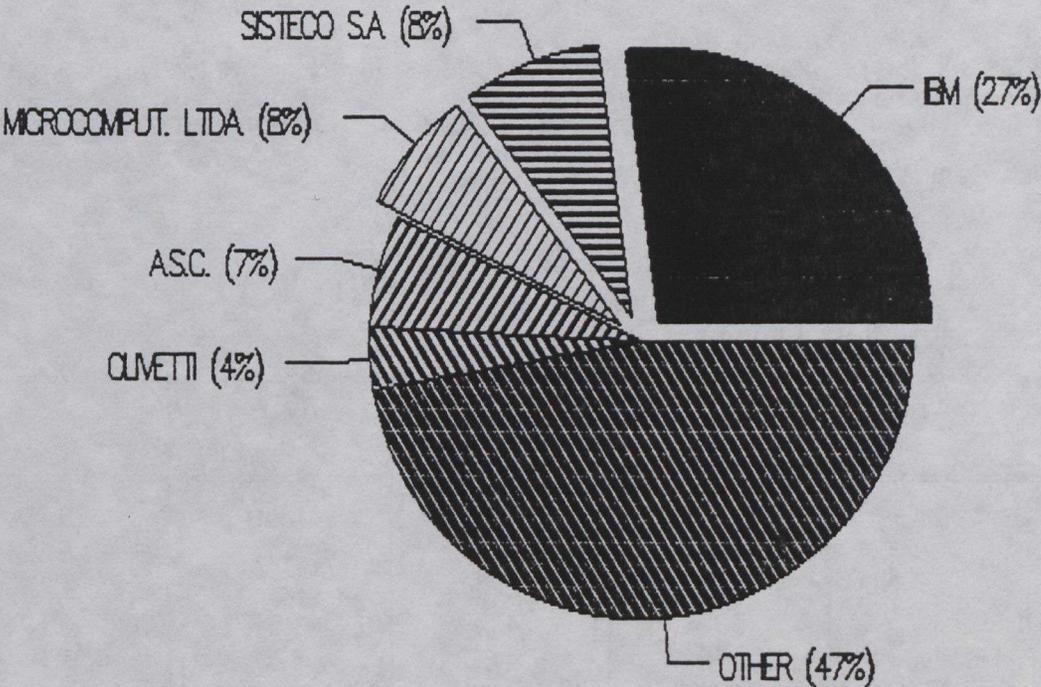
## 1989  Principal Kind of Software Imported

| KIND OF SOFTWARE | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| WORD PROCESSOR | 69644 | 13 % | 770 | 6 % |
| APPLICATION | 6336 | 12 % | 4869 | 36 % |
| OPERATING SYSTEM | 6129 | 12 % | 1253 | 9 % |
| ELECTRONIC WORKSHEET | 4103 | 8 % | 879 | 6 % |
| UTILITY | 3699 | 7 % | 573 | 9 % |
| OTHER | 25845 | 49 % | 5346 | 39 % |
|  | 53076 | 100% | 13690 | 100% |

In 1989 as in the previous years the most imported softwares were twelve.  Here are the main five followed by Data Base, Grafics, Integrators, Net Administrator, Design and Publish Design respectively.

## 1989  Principal Brands Imported

| PRINCIPAL BRANDS | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| IBM | 14818 | 28 % | 4240 | 25 % |
| MICROSOFT | 4331 | 8 % | 444 | 3 % |
| LOTUS | 3388 | 6 % | 952 | 7 % |
| WORDPERFECT | 2324 | 4 % | 381 | 3 % |
| ASHTON TATE | 1921 | 4 % | 670 | 5 % |
| OTHER | 26294 | 50 % | 7003 | 51 % |
|  | 53076 | 100% | 13690 | 100% |

In addition to these brands it is important to consider the presence of other brands of software like:  Unisys, Novell, NCR, Borland and Santa Cruz Operation that are an important part of the market as a whole.

# 1989 IMPORTS (UNITS)
## KIND OF SOFTWARE

OPERATIVE SYSTEM (12%)

APPLICATION (12%)

EWORKSHEET (8%)

WORD PROCESSOR (13%)

UTILITARY (7%)

OTHER (49%)
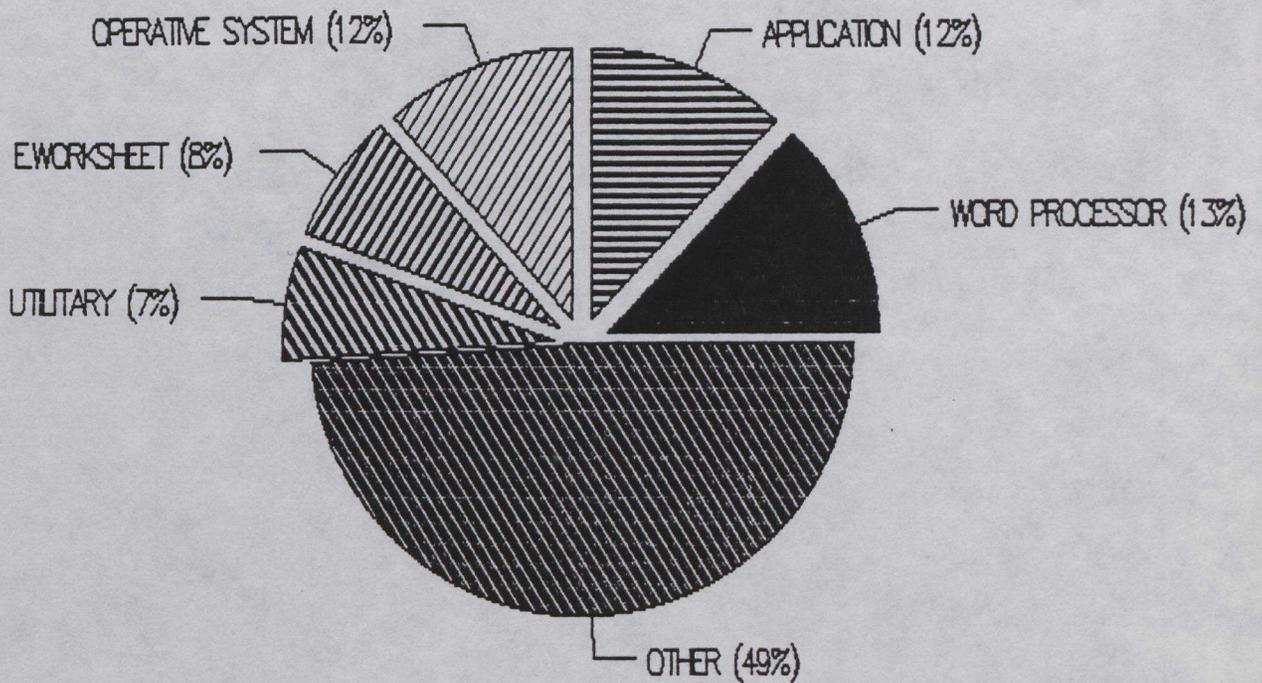
# SOFTWARE 1989
## PRINCIPAL BRANDS (UNITS)

MICROSOFT (8%)

ASHTON TATE (4%)

LOTUS (6%)

WORD PERFECT (4%)

IBM (28%)

OTHER (50%)
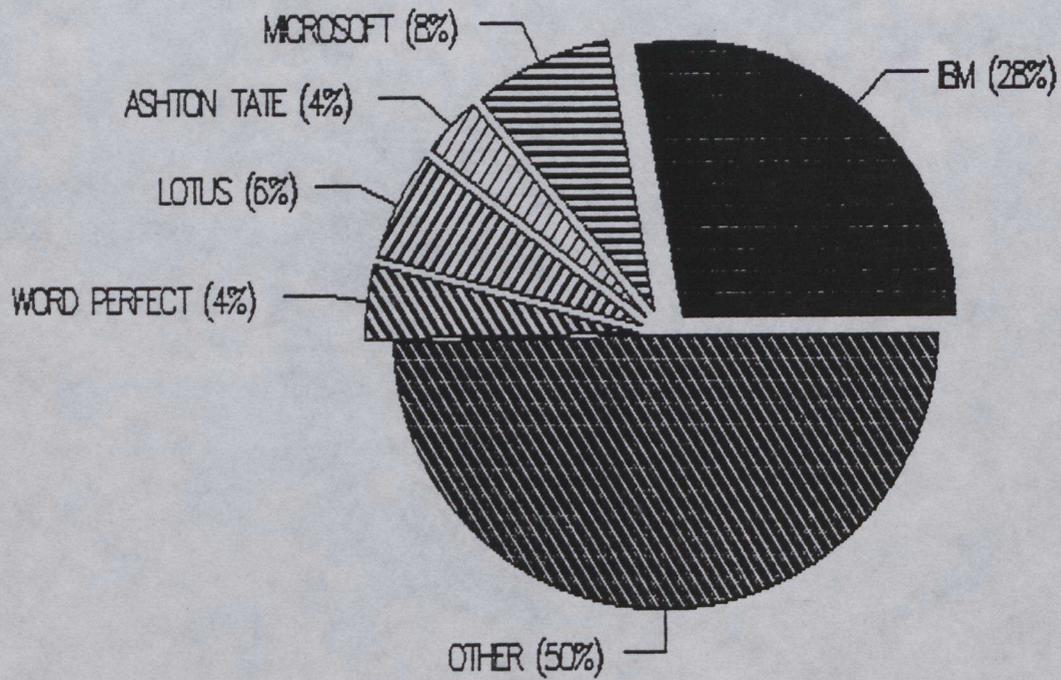
1990

| MONTH | UNITS | % | US$ (Thousands) | % |
|-------|-------|-----|------|------|
| January | 2963 | 4 % | 720 | 6 % |
| February | 8234 | 12 % | 1048 | 9 % |
| March | 3443 | 5 % | 641 | 5 % |
| April | 3912 | 6 % | 1165 | 10 % |
| May | 2514 | 4 % | 1091 | 9 % |
| June | 3912 | 6 % | 724 | 6 % |
| July | 10512 | 15 % | 1023 | 9 % |
| August | 7153 | 10 % | 837 | 7 % |
| September | 3847 | 6 % | 573 | 5 % |
| October | 9389 | 14 % | 1578 | 14 % |
| November | 6816 | 10 % | 1240 | 11 % |
| December | 5595 | 8 % | 1023 | 9 % |
|  | 68290 | 100% | 11663 | 100% |

Analizing 1990, it can be observed that the total amount of dollars imported decreased in comparison with 1989. On the other hand the quantity of units increased by 29 %.

The main companies kept their market participation at similar levels than the previous year in total of units imported, but in the amount of dollars it was lower .

| COMPANY | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| IBM | 11670 | 17 % | 2235 | 19 % |
| UNISYS | 9576 | 14 % | 478 | 4 % |
| MICROCOMPUTADORES LTD. | 5768 | 8 % | 1195 | 10 % |
| OLIVETTI | 5425 | 8 % | 588 | 5 % |
| SISTECO | 4743 | 7 % | 813 | 7 % |
| OTHERS | 31108 | 46 % | 6354 | 55 % |
|  | 68290 | 100% | 11663 | 100% |

For 1990, some changes happened between the main importers, for instance this year companies like OLIVETTI and UNISYS appeared with a marked force increasing their participation more than the others in the software market. IBM is leading the market again, but with a lower participation than the previous year, beginning a tendency to decrease its percentage of the total imports.

Another interesting point is that the direct importers have began to increase their operations, especially the final users like big companies and corporations that operate mainly in the Mining, Forestry, Fisheries, and Finance sectors.

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# SOFTWARE (1990)
## MAIN IMPORTERS (UNITS)



UNISYS(CHILE) CORP. (14%)

MICROCOMPUT. LTDA. (8%)

IBM (17%)

OLIVETTI (8%)

SISTECO S.A. (7%)

OTHER (46%)
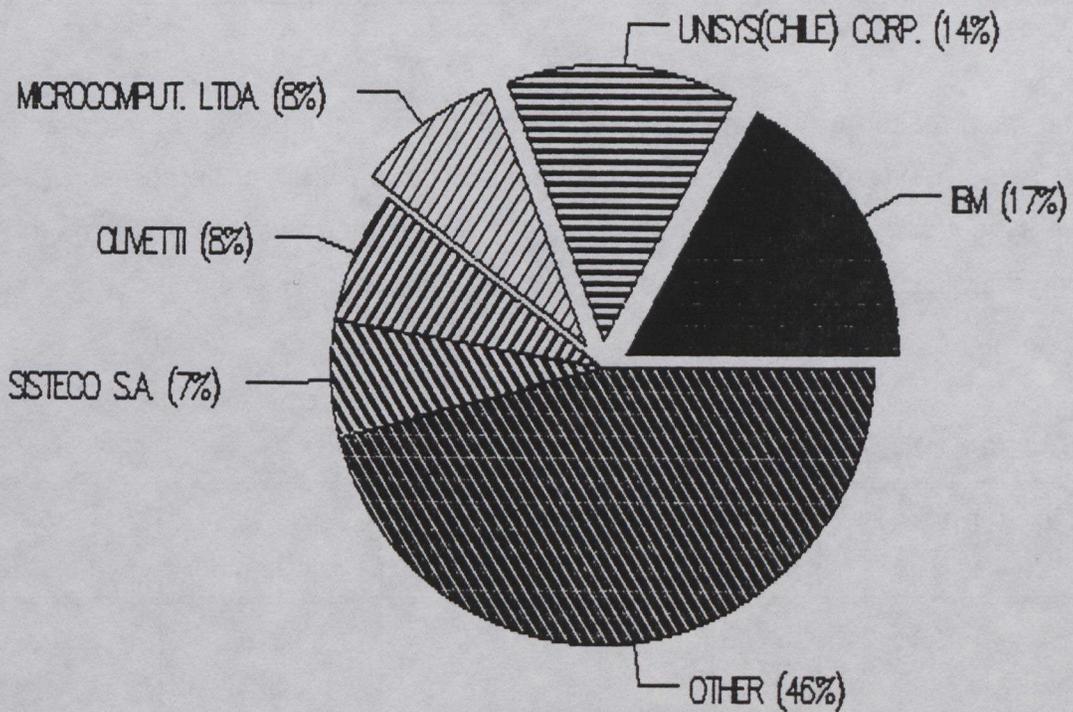
1990  Principal Kind of Software Imported

| KIND OF SOFTWARE | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| APPLICATION | 11668 | 17 % | 3881 | 7 % |
| WORD PROCESSOR | 11119 | 16 % | 815 | 7 % |
| OPERATING SYSTEM | 7413 | 11 % | 1778 | 15 % |
| ELECTRONIC WORKSHEET | 7016 | 10 % | 1240 | 11 % |
| DATA BASE | 3024 | 4 % | 659 | 6 % |
| OTHER | 28050 | 42 % | 290 | 28 % |
| | 68290 | 100% | 1163 | 100% |

The main reason for the increase in the total of units imported and the dollar amount decrease, is based on the massive demand of software like Word processor, Electronic Worksheet and Applications; in the case of the Operating Systems, it seems to have a high correlation with the growth of the hardware imports for the same period.

1990  Principal Brands Imported

| PRINCIPAL BRANDS | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| IBM | 12457 | 18 % | 2379 | 20 % |
| UNISYS | 9704 | 14 % | 569 | 5 % |
| MICROSOFT | 8139 | 12 % | 661 | 6 % |
| WORDPERFECT | 6172 | 9 % | 542 | 5 % |
| LOTUS | 5060 | 7 % | 1162 | 10 % |
| OTHER | 26758 | 40 % | 6350 | 54 % |
| | 68290 | 100% | 1163 | 100% |

During this Season the brands with a major presence in the market didn't change too much, the most important variation is the case of Unisys with the highest increase compared with 1989, and other brands the same as Microsoft, Lotus, and WordPerfect.

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# 1990 IMPORTS (UNITS)
## KIND OF SOFTWARE



W.PROCESSOR (16%)

OPERATIVE SYSTEM (11%)

APPLICATION (17%)

E.WORKSHEET (10%)

DATA BASE (4%)

OTHER (42%)
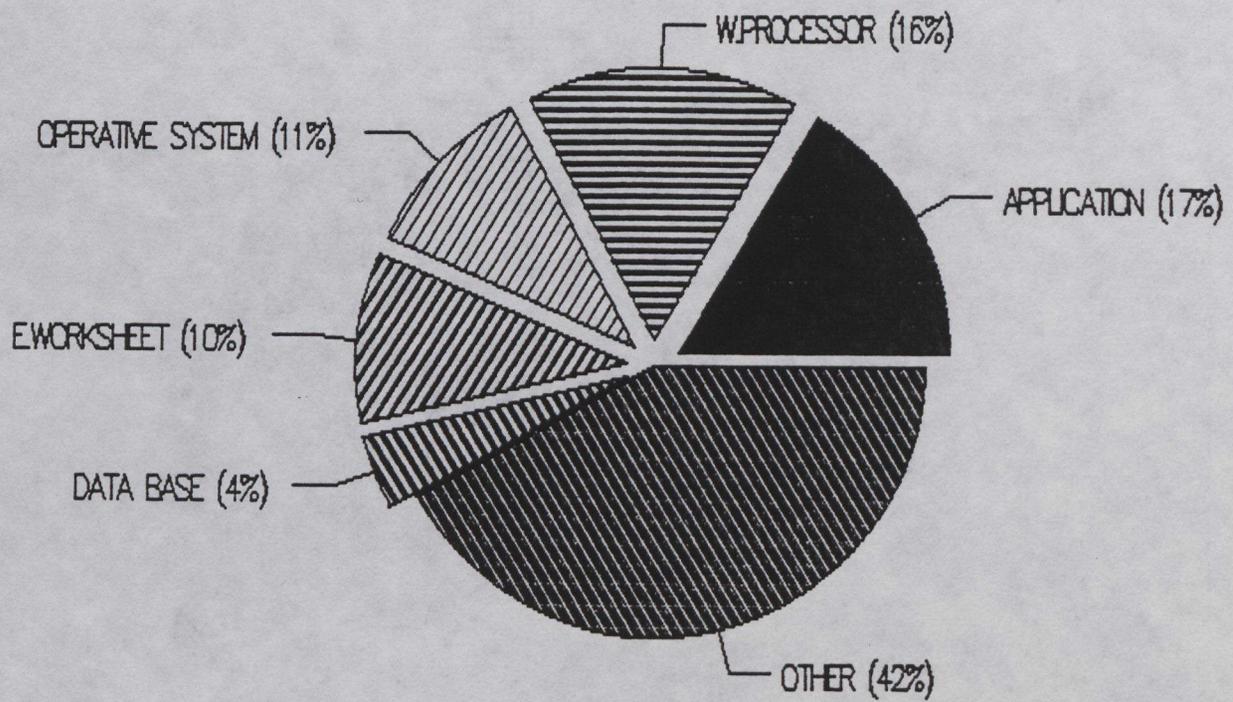
# SOFTWARE IMPORTS 1990
## PRINCIPAL BRANDS (UNITS)

UNISYS (14%)

MICROSOFT (12%)

BM (18%)

W.PERFECT (9%)

LOTUS (7%)

OTHER (39%)
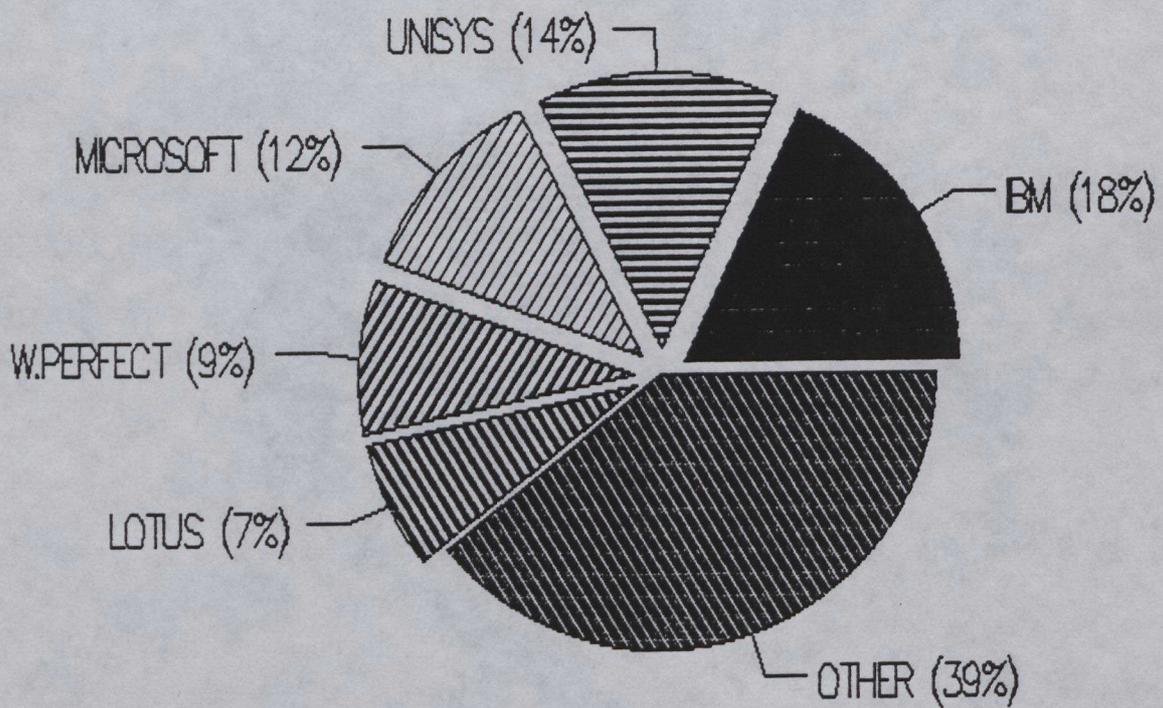
To sum up the main brands, as a whole they concentrate a 60% of the total imported in the year.

1991

| MONTH | UNITS | % | US$ (Thousands) | % |
|-------|-------|---|-----------------|---|
| January | 14152 | 14 % | 721 | 9 % |
| February | 10523 | 10 % | 566 | 7 % |
| March | 7462 | 7 % | 794 | 9 % |
| April | 8504 | 8 % | 880 | 11 % |
| May | 10263 | 10 % | 1052 | 13 % |
| June | 21995 | 22 % | 1026 | 13 % |
| July | 3888 | 4 % | 408 | 5 % |
| August | 5832 | 6 % | 613 | 8 % |
| September | 3645 | 4 % | 510 | 6 % |
| October | 6561 | 6 % | 561 | 7 % |
| November | 4374 | 4 % | 460 | 6 % |
| December | 4860 | 5 % | 512 | 6 % |
| | 102059 | 100% | 8103 | 100% |

Until June of this year the information is real, after that they are projections based on an average of the annual increasing rate in the last three years.

(*) Projected Information

| COMPANY | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| IBM | 6010 | 17 % | 1265 | 19 % |
| MICROCOMPUTADORES LTD. | 4421 | 8 % | 545 | 10 % |
| CIENTEC S.A. | 3630 | 14 % | 459 | 4 % |
| D.P.C. | 27409 | 8 % | 308 | 10 % |
| SISTECI | 1351 | 8 % | 235 | 5 % |
| OTHER | 1351 | 7 % | 2250 | 7 % |
| | 72979 | 100% | 5062 | 100% |

1991 presents the same tendency as the previous years, increasing strongly in units and decreasing slowly in dollars.

Like the previous year the direct importers continued with their operations, in the same areas of the market, however some new companies appeared this season like D.P.C. with a big amount of units imported leading the market in this sense during the first six months, and CIENTEC S.A. that began to consolidate its position climbing up to the third place in the ranking. Other companies with importance in the market are COMSOFT S.A. and A.S.C. (Avanzados Sistemas de Conocimiento S.A.).

# TOTAL SOFTWARE IMPORT (JAN – JUN 1991)
## MAIN IMPORTERS (UNITS)

DPC (38%)

SISTECO S.A. (2%)

BM (8%)

MICROC. LTD. (6%)

CENTEC S.A. (5%)
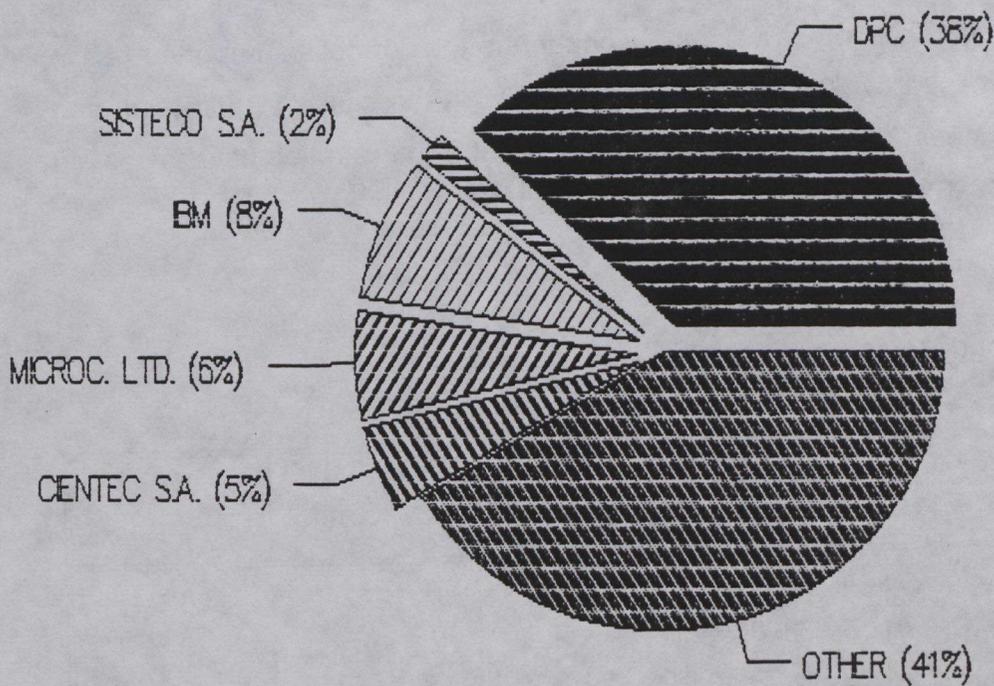
OTHER (41%)

## 1991 Principal Kind of Software Imported

| KIND OF SOFTWARE | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| WORD PROCESSORS | 10704 | 15 % | 376 | 7 % |
| OPERATING SYSTEM | 7363 | 10 % | 823 | 16 % |
| APLICATION | 6468 | 9 % | 1286 | 25 % |
| NET ADMINISTRATION | 3784 | 5 % | 480 | 9 % |
| ELECTRONIC WORKSHEET | 2856 | 4 % | 291 | 6 % |
| OTHER | 41804 | 57 % | 1806 | 37 % |
| | 72979 | 100% | 5062 | 100% |

Compared with June of last year, all the different kinds of software have increased in a considerable amount their import volume, although the total of dollars imported has in some cases decreased by 50% less than last year  as in the case of Application and Electronic Worksheet.  On the other hand some like Net Administration have increased to duplicate this 1990 imports.

## 1991 Principal Brands Imported

| PRINCIPAL BRANDS | UNITS | % | US$ (Thousands) | % |
|---|---|---|---|---|
| IBM | 8036 | 11 % | 1277 | 25 % |
| NOVELL | 3308 | 5 % | 447 | 9 % |
| MICROSOFT | 28955 | 40 % | 384 | 8 % |
| WORDPERFECT | 4895 | 7 % | 278 | 5 % |
| LOTUS | 1926 | 3 % | 268 | 5 % |
| OTHER | 25859 | 34 % | 2408 | 48 % |
| | 72979 | 100% | 5062 | 100% |

# SOFTWARE IMPORTS (JAN – JUNE 1991)
## KIND OF SOFTWARE (UNITS)

APPLICATION (9%)

E.WORKSHEET (4%)

NET ADMIN. (5%)

OPERATING SYSTEM (10%)

W.PROCESSOR (15%)

OTHER (57%)
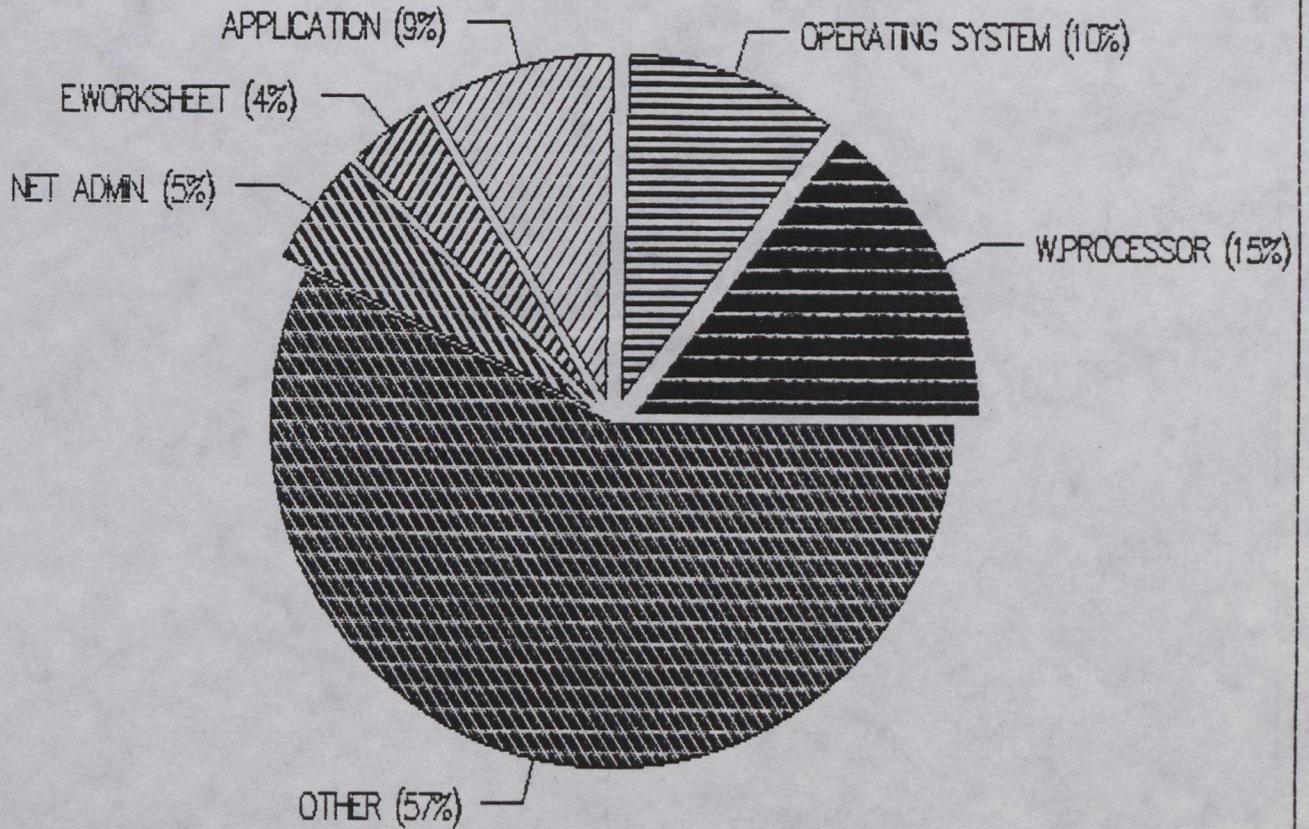
# SOFTWARE IMPORTS (JAN – JUNE 1991)
## PRINCIPAL BRANDS (UNITS)

MICROSOFT (40%)

BM (11%)

W.PERFECT (7%)

NOVELL (5%)

LOTUS (3%)

OTHER (34%)
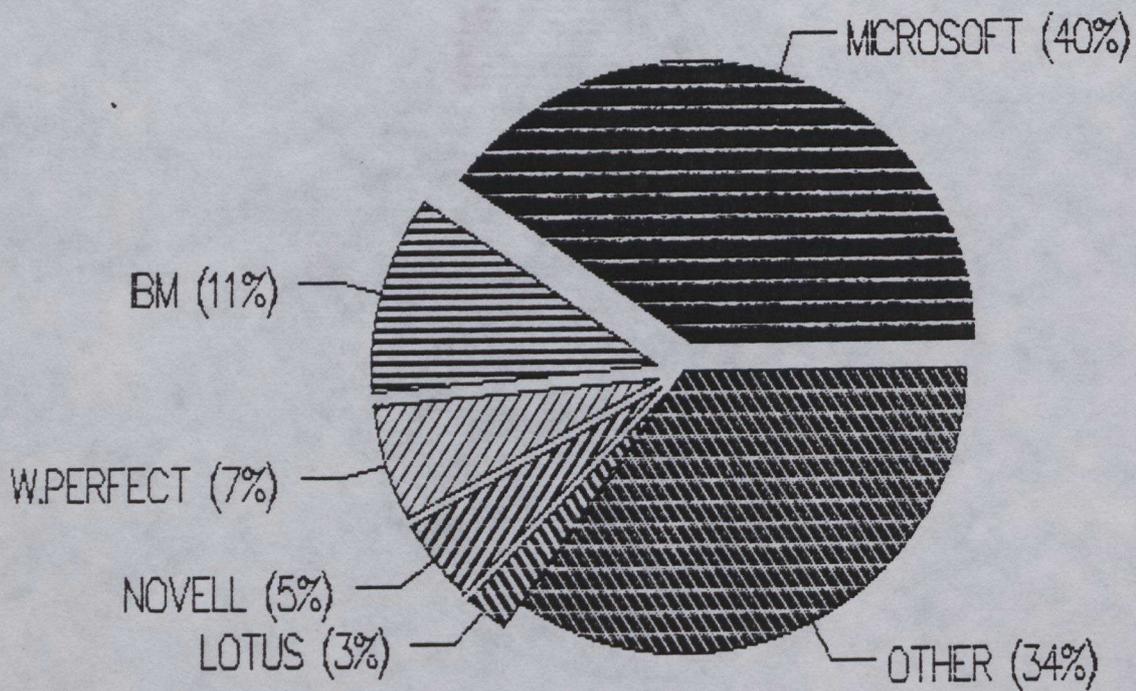
Between the principal brands in the market there are no significant variations, except in the case of NOVELL, thanks to an agressive introduction with a considerable amount of imports. In the case of MICROSOFT, this brand is leading the ranking of units imported displacing IBM to the second place.

CONCLUSION

Considering the information on software imports from 1988 to June 1991, it is possible to specify:

- That an increasing demand of software exists in the Chilean market.

- That even though the information considers only part of the reality, there are sufficient indicators to determine who are the principal importers, identifyin the main brands and the most important kinds of software provided by foreign suppliers.

- That the countries of origin for these products are led by United States and Mexico in first place and followed by Japan and Canada.

- That today the growing Chilean domestic industry is competing strongly with other countries, especially in Specific Solutions that involve a high cost. This is having a repercussion on the total amount of dollars imported, which is decreasing every year.

PROJECTIONS:

- The projections for the next two seasons show an increasing rate of 36 % for 1992, and a 21 % for 1993, in the total amount of units to be imported.

## 4.2.  Software Exports

In the last few years Chile has structured its software export efforts through the creation of professional associations such as the Committee of Software Exporting Companies, an entity which groups not only the regular software companies, but also other firms which have developed internally some type of computer solution which can be marketed abroad.

The type of software developed is mostly of the specialized applications type, and not the standard packaged mass use application.  That is, top technology tools are used to design applications.  However, there are some exceptions, like the Ars Innovandi Company which has designed a text processor, and Synapsis, with its XNear data base software, and other companies.  The difficulty in providing remote support has turned out to be an important barrier in the export of closed architecture software.

Total exports in 1990 fluctuated between 2 and 3 million dollars, yet sales of chilean computer solutions abroad grew by 50% between 1989 and 1990.

The exact export volume is difficult to determine, since exporters such a ENAEX, an Army-related explosives manufacturer, do not report their results.  Also, the present duty system which imposes double tariffs on programming hours (offshore programming) (35%) considering them "consulting services", as compared to packaged software which pays a standard 11%, is a discouraging factor for software exports in general, and for disclosure of relevant information in particular.  For instance, there is some mention in the industry of certain software exports which have been presented as book exports to avoid tariffs and paperwork.

Exports represent 0.06 per cent of world software exports, which in 1988 were over 50 billion dollars worldwide.

Exports include software as such, as well as programming hours, exported as " Offshore Programming", and the sale of consulting services associated to chilean software.

The following table describes the export sales of the seven principal exporting companies in 1990.

TABLE No.

CHILEAN SOFTWARE EXPORTERS (1990)

| COMPANY NAME | SALES IN DOLLARS |
|---|---|
| Sonda | 609.000 |
| Synapsis | 600.000 |
| Sistemas Integrales | 300.000 |
| Emergency 24 | 250.000 |
| Binaria | 220.000 |
| Softland | 40.000 |
| Autys | * |
| TOTAL | 2.019.000 |

* Autys did not inform its results.

4.2.1  Type of Software Exported:

(a)     Sonda:

It has exported five different software packages, and has marketed them through its alliance to Digital Equipment, the number two computer company worldwide. Its bank automatization software, the FTS ( Financial Transference System) has sold successfully abroad.

(b)    Synapsis:

It is one of the principal holdings in energy and sistems. It has exported projects in software consulting to public utilities, health and retirement funding systems. Synapsis's star product, "Synergia", for the automatization of accounting and administrative activities, has been already sold to 15 Colombian electric power companies, involving a US$500.000 dollars sale and motivating Synapsis to open up a branch office in Bogotá, Colombia, to explore the latin american market. Synapsis also does Offshore Programming. Its efforts to sell closed packages has been less rewarding. The firm has designed "XNear", a software wich provides on-line access to large data bases from minicomputers, and allows information to be rescued from mainframes. This package has been sold to seven United States counties and sales total around US$50.000 dollars.

(c)    Softland:

It has sold administrative applications to Bolivia, Argentina, France and Germany.

(d)    Sistemas Integrales:

Its software for processing of complex surveys and census data, "Ariel Plus" has been sold to more than 40 countries throughout the world, with sales of over US$300.000 dollars in 1990. Organizations such as the World Bank, the Interamerican Development Bank and FAO have purchased this package.

(e)    Binaria:

It designed and programmed "Meta Star", a data repository which allows the creation of a common interface for the complete company software. Binaria generateed sales of around US$250.000 with this software. It is distributed in the United States by Cincom, one of the four big world data base producers.

(f)    Emergency 24:

It designed "Chicago Connection", a system which allows the monitoring of alarm signals by computer. It is marketed in Chicago, U.S.A., by Emergency 24 Inc. This software provides a yearly income flow of about US$250.000 to the chilean company.

(g)   Autys:

It does traditional offshore programming. It exports software programmed in Chile and designed in France, where it is sold by a branch office of Price Waterhouse Consultants. Its products include control programs for retirement funds, interpersonal services and administration of public organizations.

Some non-traditional exporters include:
-       Banco Santiago, a local bank, which has presented its Banco Sud Americano - Banco Amigo, self-service bank software, in international software fairs abroad. (CEVIT, COMDEX).
-       ENAEX, national explosives company.


## 4.2.2. Offshore Programming

This involves the sale abroad of programming man-hours, which in Chile cost about 40% less than in developed countries.

This option implies not only the translation of designs prepared abroad, but mainly the design of the software itself, as well as the programming and later revision.

Such is the case of Binaria, and Emergency 24.

In summary:
-       Exporting firms are software companies as well as business firms which have developed specialized software to satisfy internal needs, and then proceed to market their effort.
-       Problems faced by chilean exporters include the difficulty to provide remote support and the double taxation-duty system, which discourages transparency of export information.

Chapter 5.          **CONCLUSIONS**

5.1.     <u>Software Industry Trends.</u>

5.1.1.   <u>General Industry Tendencies:</u>

-     Hardware is diminishing its importance relative to software and service.

-     Hardware is becoming smaller and more powerful due to miniaturization. An example of this is the recent introduction of "palmtop computers". Hewlett Packard offers a palmtop PC for about US$150.000 with 512 RAM.

-     The intense competition in the market has lowered the prices of Hardware. For instance, at present IBM advertises the sale of its PS/2 line with a 35% discount on list prices through all its distributors.

-     The software industry has experienced an explosive growth worldwide, increasing at a much faster rate than hardware. For instance, the computer industry leader, IBM, grew in software sales between 1985 and 1988 at 7,5 times the growth rate of total sales. International forecasts indicate that in 1992, 50% of all computer industry sales will come from software and related services.

-     There is a tendency toward do-it-yourself software: The advances in programming languages will make it possible to customize software. The new object-oriented technology for instance, reduces programs to discrete building blocks of preprogrammed code that PC owners can string together.

5.1.2.   <u>Trends in Chile</u>

-     In Chile, as in the rest of the world, hardware vendors are closely tied to the software production and sales. For instance, IBM makes software directly and through third parties and it owns SISTECO. Unysis owns Magenta and Synapsis.

- It is customary that companies sell not only hardware and software but also consulting. The trend is that large suppliers have evolved from offering computers to offering solutions to informatic needs at present.

- The chilean computer market absorbs changes in the international computer industry almost instantly. A case in view is the situation of WANG abroad. Its problems were echoed in the switch of SISTECO from WANG to IBM, which now owns the company, and the creation of a WANG branch office in Chile.

- Software demand grows faster than the demand for Hardware. Hardware demand increases in Chile at an estimated average rate of 10 % a year, with the sector of laptops and notebook increasing faster than the rest. The rate of software growth varies according to the equipment segment.Demand for software increases at the fastest rate for PC's and Local Area Networks and at a slower pace for Mainframes.

- Overall the software demand grows at an average rate of 25 % a year.

### 5.1.3. New Technology introduced.

- Interactive devices are being introduced at the end consumer level. This will have a significant impact on software requirements. One of this devices is the french Minitel terminals which are being introduced in Chile by DICOM, a credit rating information supplier, who is installing them in most of its client firms for self-service inquiries into their data base.

Also, Banco Santiago has a project to incorporate Minitels into their automized self-service banking locations.

-   There is a strong tendency toward open architectures and the incorporation of UNIX equipment.

-   In terms of data base software there is a marked preference for Oracle and Informix.

## 5.2.    Business Opportunities

Business opportunities for Canadian companies in this industry are related to the following aspects:

5.2.1.  Characteristics of the chilean software industry
5.2.2.  Identification of software demand
5.2.3.  Entry Strategy

### 5.2.1.  Characteristics of the Chilean software industry.

The software sector in Chile may be considered a strategic industry in the sense that it has ties with other industries, for example, through programming of custom software or database management; it holds attractive market opportunities; it is technology intensive and it offers high value-added services.

Chile has an attractive environment for this industry, because it has an entrepreneurial problem-solving culture, with low cost rents and labor, with management commitment and understanding.

Also, there is intellectual property protection, with great progress being made in educating end users about the need to guarantee property rights by purchasing and registering software.

The country provides a cheap source for off-shore software development and foreign firms look towards Chile as a base in Latin America.

## 5.2.2. Identification of Software Demand:

In chapter 2, item 2.2 of this report, we have identified the specific software demand per sector. The following section summarizes the trends in software demand.

The demand for imported software focuses on the following variables:

- Specific markets and applications: oil, copper mining, specific industrial processes.
- Software for mainframes which can only be developed by large software houses.
- Demonstrated experience in use and customization of software elsewhere. The cost of a unique software product is not comparable to the purchase of a product that has already been tested and tried abroad. Experience is a key issue in marketing of imported software.

Sectors for Software Development:

- Banking: Money tables
  Electronic stock exchange software.

- Production: Software for PC's which control production plants.

- Communications: Image processing by computer.
  General traffic and vehicle traffic software.

- Information Technology: Software tools for software development.

- G.I.S.: Geographical Information Systems.

Other sectors are detailed in Chapter 2.

### 5.2.3. Entry Strategy

A succesful import effort requires:

- Packaging

- Marketing.  This implies:
  - . Adequate technical support.
  - . Training for Users.
  - . Adapting the software to the local idiosincracy and regulations.
  - . Operation Backup and support.  This is a key factor in Mainframe equipment.
  - . Automatic Upgrade for present clients of the latest software release.

- Documentation:  User manuals, Backup documents and information.


### 5.3. Conclusions

1. Specialized Software is today more important than the hardware it runs on.  The computers may be chosen to accomodate the specific software according to the speed required of the computer, the capability to manage a large quantity of data, cost and other aspects.

   For instance, in the case of G.I.S. (Geographical Information Systems), a certain GIS software such as ARC-INFO of ESRI, may cost about U.S.$60.000 dollars to be used witha work station, and the work station itself may cost about US$35.000 dollars.

   It is more relevant in this situation therefore, to choose a workstation that will adequately cover the requirements of the software.

2. For application packages, the supplier support is a key variable used by the buyer when choosing a certain software. The technical post-sale support required in installation, usage problems, user training and so forth, is equally or more relevant than the price of the SW itself.

In the banking system, where downtime is extremely costly, the choice of a SW with a local distributor that will guarantee technical support is fundamental to the purchase decision.

Conclusion: Provide adequate technical support through a local distributor. The lack of remote support is a strong barrier to imported software.

ADDITIONAL   EXHIBIT   No.   1.

MAIN COMPANIES PARTICIPATING IN SOFTEL 91 AND THEIR HARDWARE

| Company | Brands | Kind of Hardware |
|---|---|---|
| 3 M | 3M | Liquid cristall scopes, Disquettes, cartridges, etc. |
| Apple | Macintosh | Computers , Graphic area, scanner, fotocomposer. |
| Altec | Altec | PC ; autonom. Work station Landstation. |
| Dicec | Bernoulli | Removable Disks. |
| Data General | Data General | Computer AVIION AV 5000. |
| Epson | Epson | Computers, point printers, scanner. |
| IBM | IBM | Computers PS-2, AS-400, systems AS/ENTRY, SI/ENTRY Laser printer , Notebook, Work stations. |
| IMEX Estado | Everex, Chicony | Computers, Data transmmition modems, servers, Laptops. |
| INGENAC | Teledata, Pinnacle tektronix, Calcomp, Liberty, Zeta Brunning | Printers, optic Disks, Digital.table, plotter. terminals. |
| Intervideo | Tandon | Computers, PC , Systems, Laptop. |
| Kodak | Kodak | Laptop printer for PC and Macintosh, Laptop. |
| Lógica | Mai Basic Four | Computer, printer. |
| Magenta | Twinhead, Zenith | Computer, server, Laptops. |
| Metrodata | Mitac | Computers. |
| Olivetti | OLivetti | Laptop and Notebook |
| Olympia | Olystar, Olympia | Computers and Printers |
| PBC | CMS Enhacements | Processors and Dispositives. |
| Phillips | Phillips | Notebook. |
| Sisteco | Clone, Citizen | Computers, printers. |
| Dist. Digitales | Samsung, Texas, AT&T, | Computers, printers. Catridge units, Monitors, Notebook. |

| | | |
|---|---|---|
| SONDA | Digital Equip.Corp. | Computers, Systems. |
| Synapsis | Longshine<br>Sun Microsystems | Computer, Notebook,<br>Work Station. |
| Syscal | Panasonic | Laptop. |
| Teknos | Okidata | Point and Laser printers. |
| Teknodisc | Abaton | Mouse, and other prodcts. |

MAIN COMPANIES PARTICIPATING IN SOFTEL 91 AND THEIR SOFTWARE

ADMINSTRATIVE AND MANNAGING SOLUTIONS

1. IBM:
   Tasco:          Administrative information system RS/6000.

1 KANO:           PLATINUM, commercial managing system.
                  MAP, Human resources system.
                  Finance general solution FINIPAC:
                  Managing executive system, COMMANDER.
                  Inventory and purchasing system, IMC
                  Commercial managing system, E.

L NDE :           Personal system PS/2.
                  Managing automatization software, AUGE.

! 
Computación:      Multiusers solutions AIX/PS/2.
                  Productivity software and OS/2.
                  Documents Data Base solution, ICARO .

CONTAC :          Process control solution.

L      AEG
   OLYMPIA:       Integrated Novell Network system,
                  for managing, school adminstration, etc.

3) ALTEC :        Compu flex system.

· Synapsis:       Video Integrator intelligent system
                  for Estate Agents.

! Success :       Oyster, antivirus software .
                  Borland applications.

! Informat:       Administrative solution systems.

7) Terabyte:      INTETEL 1024, control phone using program.

· SONDA:          SONDA managing system, access control system,
                  GESAM Administrative system.

( Softland:       Administratives systems; SIMON, Finantial Accounting
                  Integrated Systems, Publishing software.

')Excelsys
  Engeneering:    Producting Managing system, Publishing systems
                  for touch screen and conventional.

 Marketing y
 Tecnología:      "EL AYUDANTE", software thatenable users who don't
                  know DOS to operate programs.

)Synapsis :    Integral managment solutions for the Health area, it
               covers also other sectors of the economy, like Energy
               and Transport.

)Metasoft:     FITWIT 2.0, modeling application system for planning
               and project evaluation, finance and statistics simulation.

)Optimisa S.AA.: Complete administrative system based on Oracle.

15)Wintex :    Optimization managing solutions for production,services
   (Kodak)      and commercial areas, with RADIX 1.0, Skanf 1.6, CYC 1.0
                and Fast Flow 1.0 .

'+)   FBC :     Norton accounting system .

1/)Sistemas
   Digitales :  Managing solutions.

..)Computerage :   Home and office solutions related to access ,doors,
                   alarms, light operation etc.


GRAPHIC SOLUTIONS


1) Microcomputadores : DOS Freelance graphics , AutoCAD for
                       technical engeneering design.

2) JMO:               Edition 3.0  VersaCAD for  Macintosh and  DOS oriented
                      to mechanical engeneering design solutions.

3) INGENAC :          ERDAS, ARC/INFO and CADDS graphic systems.

   Wintex :           Atex  Kodak programs for newspapers and publishers
   (Kodak)            solution with Kodak Atex Pagemake Up and Atex Writer.

   SONDA :            SOLGRAF , image integrative software, oriented to
                      graphic elements and alphanumeric format data with
                      SOL/Publicidad and SOL/Presentaciones.

   Apple :            Design, Photo composition, diagramming and color
                      separating systems.

   Scandata :         POLAROID CI-3 system, for compatible PC that enables
                      35 mm transparency printing.

   WordPerfect Chile: DrawPerfect, Design worksheet.

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IMAGE PROCESSOR SOLUTIONS

INCOM :             ARC/INFO , Geographic information system .

2) SONDA :           SOLGRAF,  integrative image system,
                    SOL/Geográfico,SOL/Forestal,SOL/Geología,SOL/Mapas.

3) Synapsis:         Applications.

4. INEX :            MAPINFO, Geographic data base software oriented to
                    data digitalization with capacity to represent 54
                    different information levels.

5) Microgeo :        AutoCad, AutoManager, CADPipe and QuickSurf,
                    image processor softwares.

6) INGENAC :         ERDAS, satellite digital image system, enables to run
                    hydrologic applications ( Military, agriculture,
                    forestry and urban areas.)

7) GTI/RDB  :        Graphic data processing system, integrated to a
                    Relational Data Base.

8) ST Computación:   ICARO, Italian system that permits to manage images
                    and documents.

9) TASCO :           GENASYS, Geographic data system construction tool.

)IMEX Estado :       OCR, image processor software.

## BANKING AND FINANCE SOLUTIONS.

) Optimisa :          DDMTSS, software developed for bank lineal trasactions
                      currently beeing exported.

) SONDA :             STF finance transaction systems , SBS automation
                      banking system, information banking systems.

) BANCARD :           Store Manager Software, computarized cashier that offer
                      powerful tools for the internal control of the company.

) Metasoft            FITWIT 2.0  for UNIX/XENIX that permits to do finance
                      and statistics simulations and functions.

5) Mekano :           Integral finance solution FINIPAC.

_) VTR :              Stock Exchange transaction system , MCE.


## NETWORK AND DATA BASE IMPLEMENTATION AND SOLUTIONS.

1) SONDA :     NAS, Network solution for VAX, permiting connectivity
               between PCs, Mac and Work stations.

_) ST Comp.:   ICARO, documental data base applied in the Italian Congress.

) Synapsis :   Integral Data Processing and comunication  solutions,
               Network system that permits difernt Operating Systems
               work together with different architectures, protocols
               and communication equipments, SUN PC-NFS file system for PC.

4) AEG Olympia :   Novell Network system that integrates different areas
                   solutions.

5) Intervideo:   ALLOY Network to connect PCs and Mac.

) Microcomp.:   Ingrs/Windows4GL, 4th generation language to support
                Relational Data Base.

) ORACLE :   OPPLUSIS , Integrated adminstrative managing system
             for Oracle.

  Terabyte :   UNIPLEX, Integrated Software.

9)   IBM :   Intermediary Systems for AS/400, RS/6000 systems.

) NEC :   Offices advanced Network solutions.