

***REUNA***  
**How an Academic Network can be  
Self-Funded**

Florencio I. Utreras  
Executive Director  
*REUNA*

***REUNA***

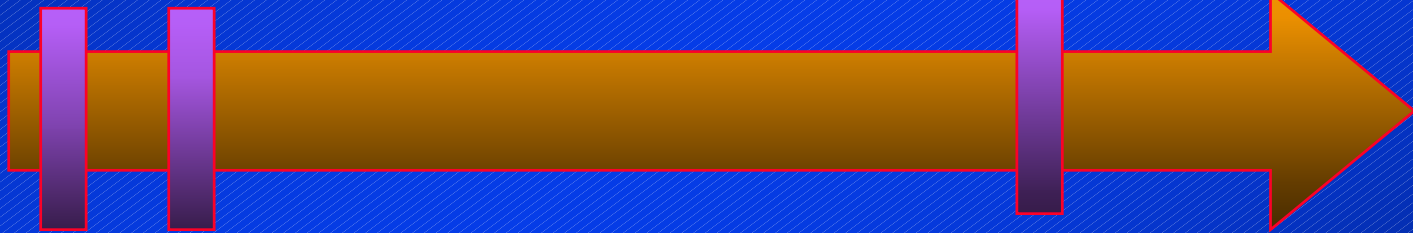
**Chile**

# Milestones in Chile's Networking

1986

1987

January 1992



UUCP

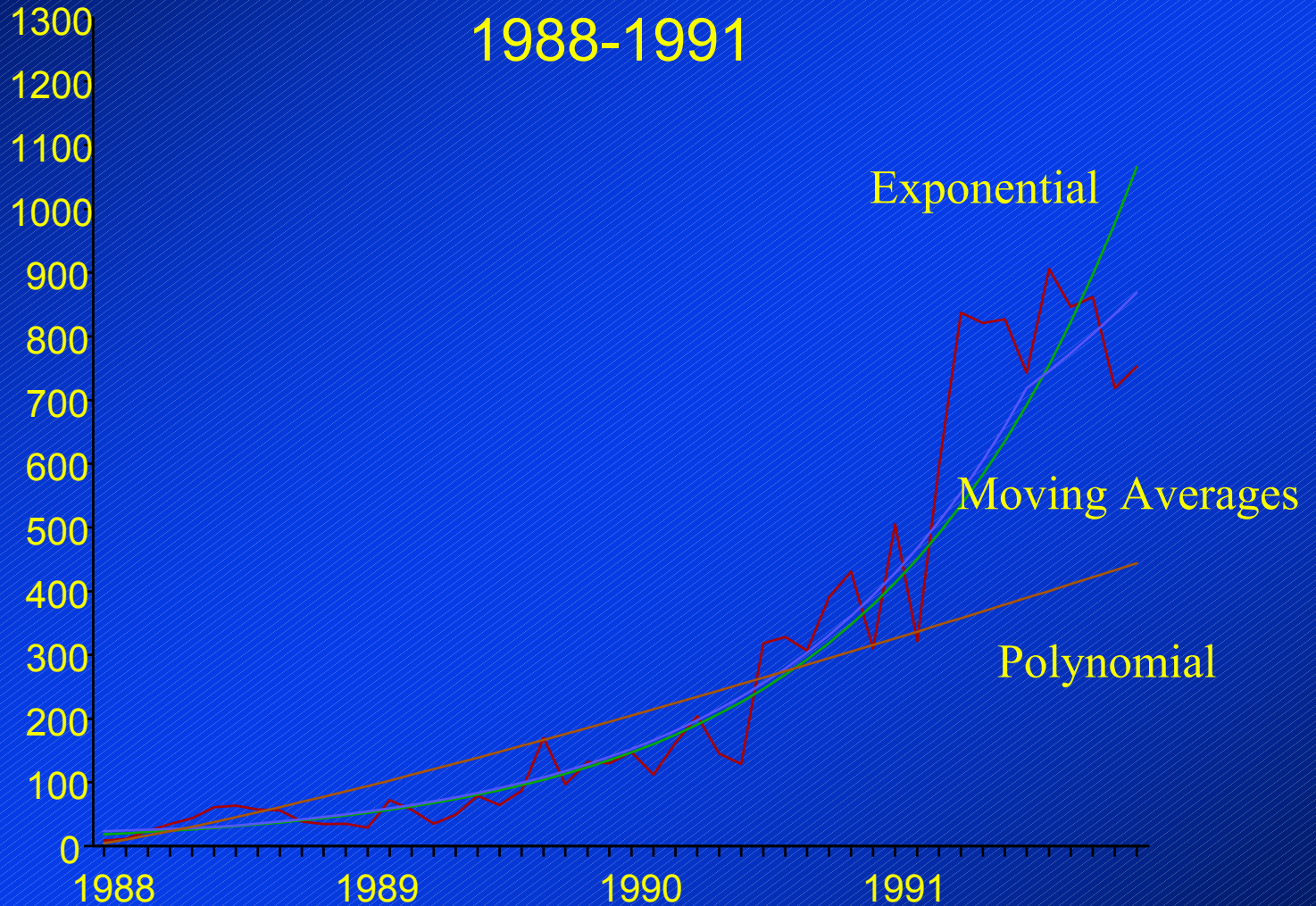
BITNET

Internet

**REUNA**

Chile

# BITNET Traffic in Mb/Month



**REUNA**

Chile

# Chile's Telecommunications Legislation

- **Service is Private since 1986**
- **Long Distance Services available thru private companies**
- **Long distance carriers must be separate companies from local access (voice) providers**
- **9 Long Distance Carriers (voice). Free choice on every call since 1994.**
- **Data Services are not regulated**

# The FONDEF Project

- **US\$ 1.000.000 Grant for:**
  - Equipment **US\$ 700.000**
- **Investment by Consortia Members**
  - Infrastructure, training, etc. **US\$ 300.000**
  - In cash **US\$ 900.000**

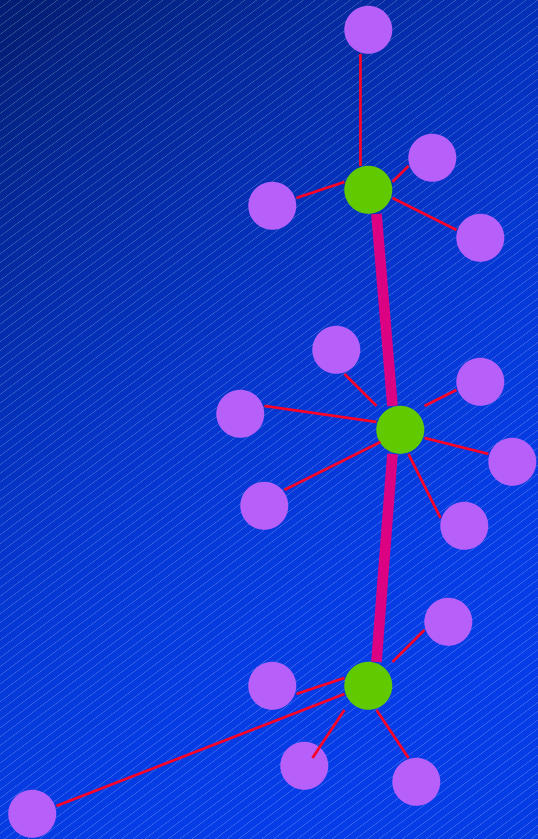
# ***REUNA*** Members

- ◌ **Universidad de Tarapacá**
- ◌ **Universidad A. Prat**
- ◌ **Universidad de Antofagasta**
- ◌ **Universidad Católica del Norte**
- ◌ **Universidad de Atacama**
- ◌ **Universidad de La Serena**
- ◌ **Universidad de Valparaíso**
- ◌ **Universidad de Playa Ancha**
- ◌ **Universidad Técnica Federico Santa María**
- ◌ **Universidad de Chile**
- ◌ **Universidad Metropolitana**
- ◌ **Universidad Tecnológica Metropolitana**
- ◌ **Universidad de Talca**
- ◌ **Universidad de Concepción**
- ◌ **Universidad del Bío-Bío**
- ◌ **Universidad Austral de Chile**
- ◌ **Universidad de Los Lagos**
- ◌ **Universidad de Magallanes**
- ◌ **Comisión Nacional de Investigación Científica y Tecnológica**

***REUNA***

**Chile**

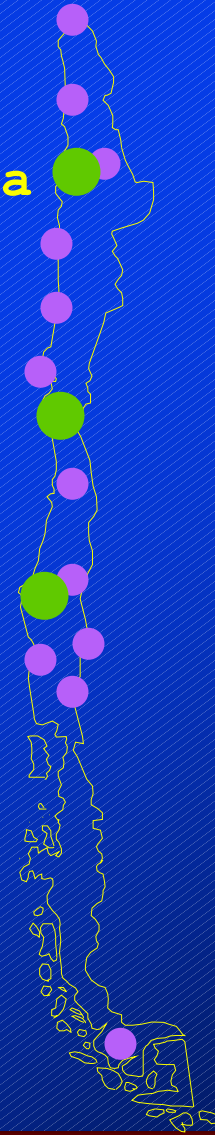
# REUNA's Network



Antofagasta

Santiago

Concepción



**REUNA**

Chile

# Link Speeds of *REUNA*'s Network

- International 512 Kbps
- National Backbone 128 - 256 Kbps
- Minimum POP Access 32 Kbps
- Maximum POP Access 256 Kbps

***REUNA***

Chile

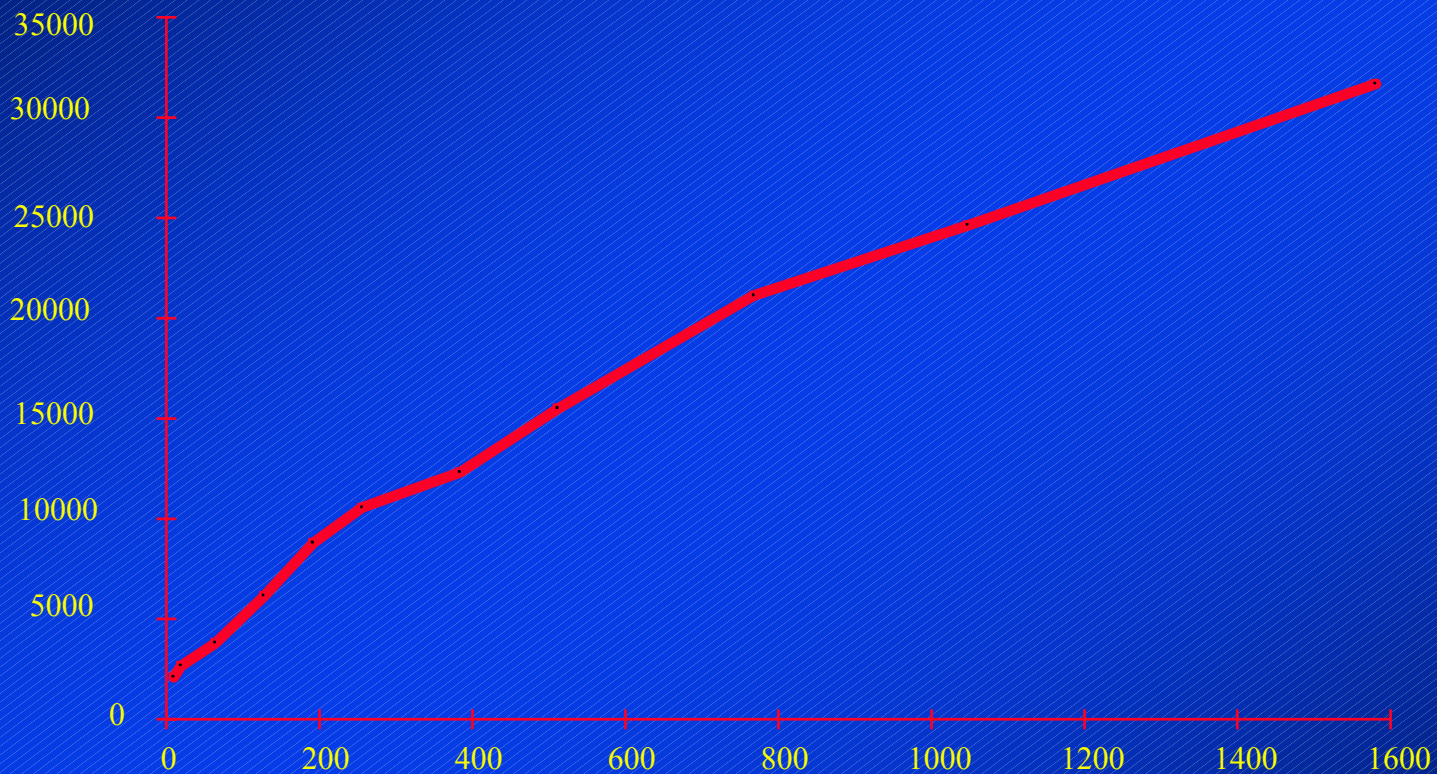
# *REUNA's International Link Speed Evolution*

January 1992	56 Kbps
February 1994	128 Kbps
February 1995	512 Kbps
November 1995 (Projected)	T1

***REUNA***

Chile

# Half Circuit Prizes Santiago-Washington In US\$



**REUNA**

Chile

# International Links Price Santiago -Washington

9.6 Kbps	US\$ 4.180
64 Kbps	US\$ 7.600
128 Kbps	US\$ 12.320
256 Kbps	US\$ 21.120
512 Kbps	US\$ 30.980
1.048 Kbps	US\$ 49.280
1.510 Kbps	US\$ 63.360

# Leased Lines Prices in Chile

19.2 Kbps inside Santiago	US\$ 180 -US\$ 234
64 Kbps inside Santiago	US\$ 234 -US\$ 322
64 Kbps Santiago-Concepción	US\$ 700
64 Kbps Santiago-Antofagasta	US\$ 965

**REUNA**

Chile

# Main Issues to Define Price

- **Cost of National Network**
- **Price of International Link**
- **90% of the traffic is to/from US/Europe**
- **Unequal networking infrastructure among members**
- **Large numbers rule doesn't apply to small numbers: T3 >> 64 Kbps**

# REUNA's Price Structure

- ◌ **Low Fixed Cost includes all National Traffic and REUNA's administrative and operational services**
- ◌ **Virtual Bandwidth pricing for International Traffic gives quasi-flat rates**
- ◌ **Flat rates depending on Physical Bandwidth available if requested**

# REUNA's Virtual Bandwidth Price List

UT 5	US \$	45.43
UT 10	US \$	84.53
UT 20	US \$	121.90
UT 40	US \$	182.91
UT 80	US \$	307.62
UT 160	US \$	517.35
UT 320	US \$	870.08
UT 640	US \$	1,463.30

Typical Choice



**REUNA**

Chile

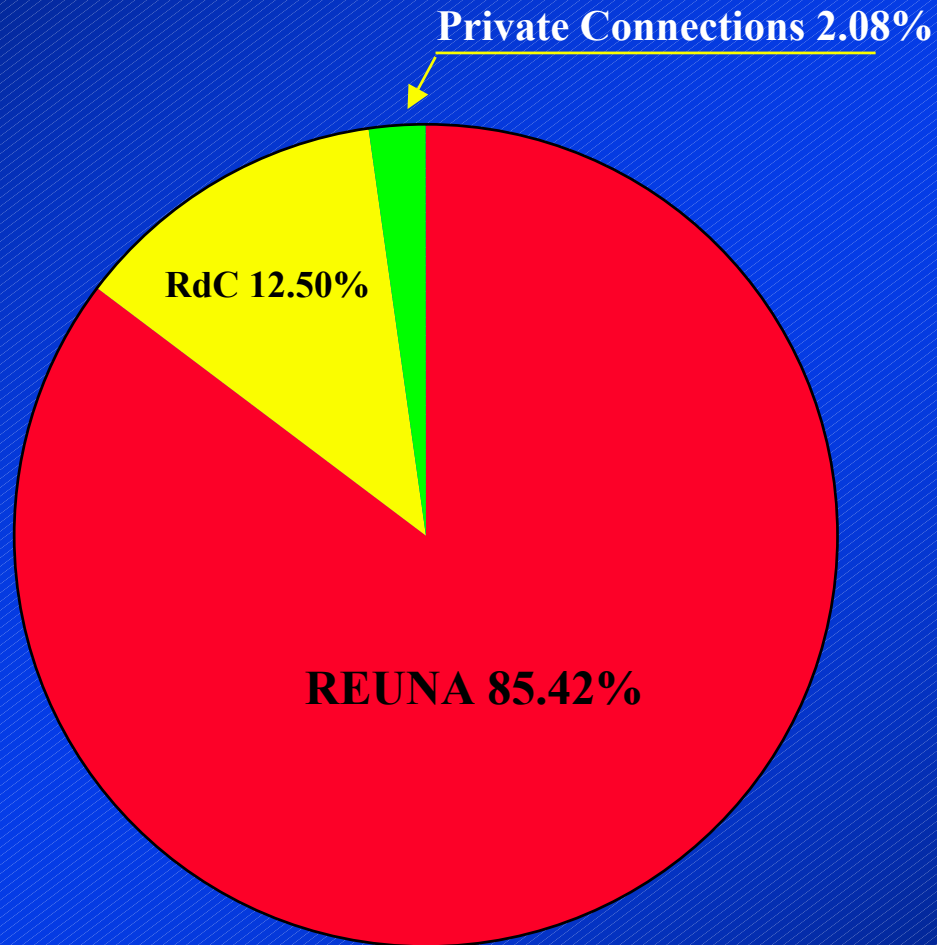
# Typical Cost

<b>Fixed Fee</b>	<b>US\$ 100</b>
<b>Router Port</b>	<b>US\$ 100</b>
<b>International Traffic</b>	<b>US\$ 520</b>
<b>Total Monthly Cost</b>	<b>US\$ 720</b>

***REUNA***

**Chile**

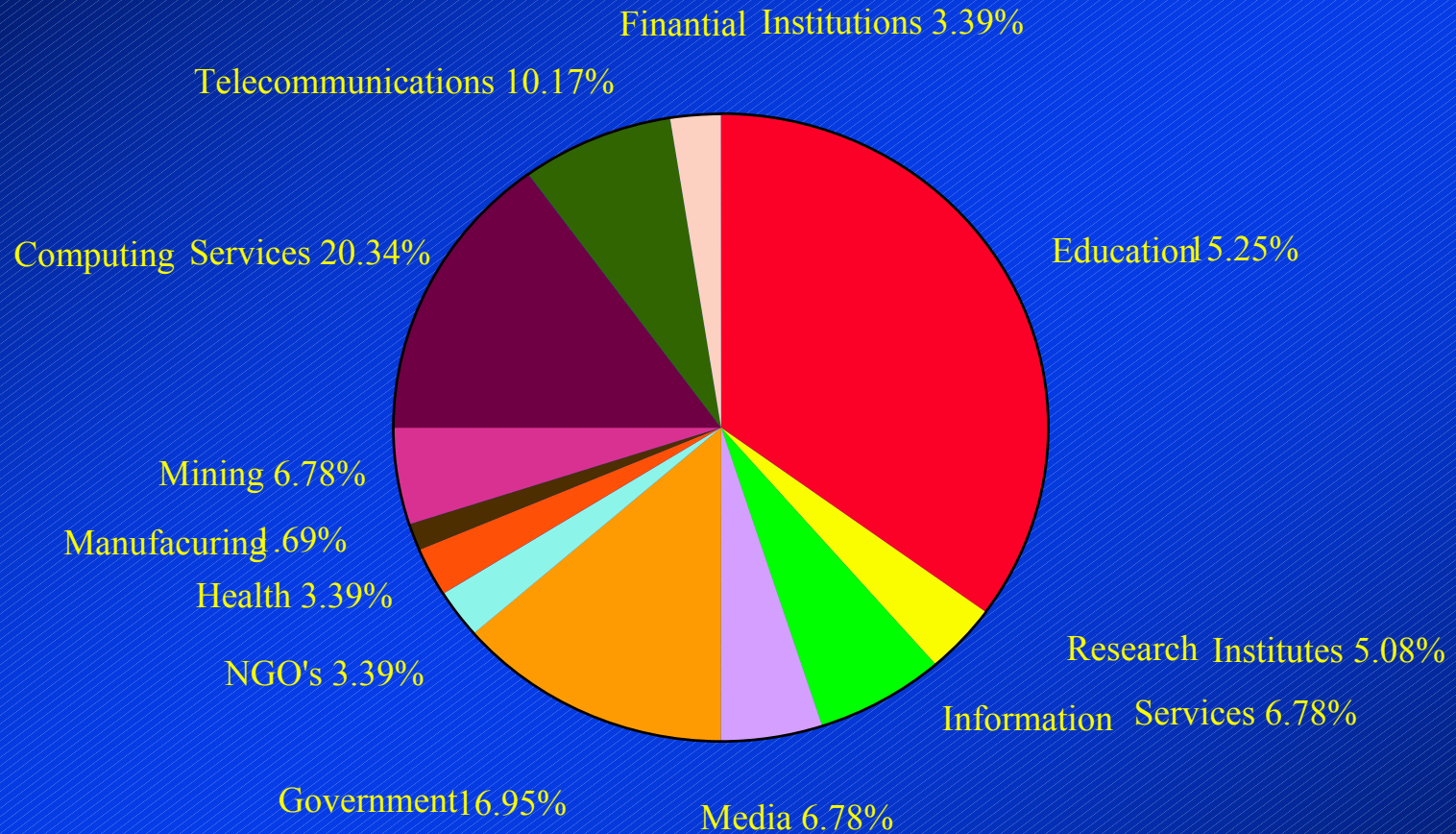
# Actual Market Share



**REUNA**

Chile

# Permanent Links thru REUNA Including Members

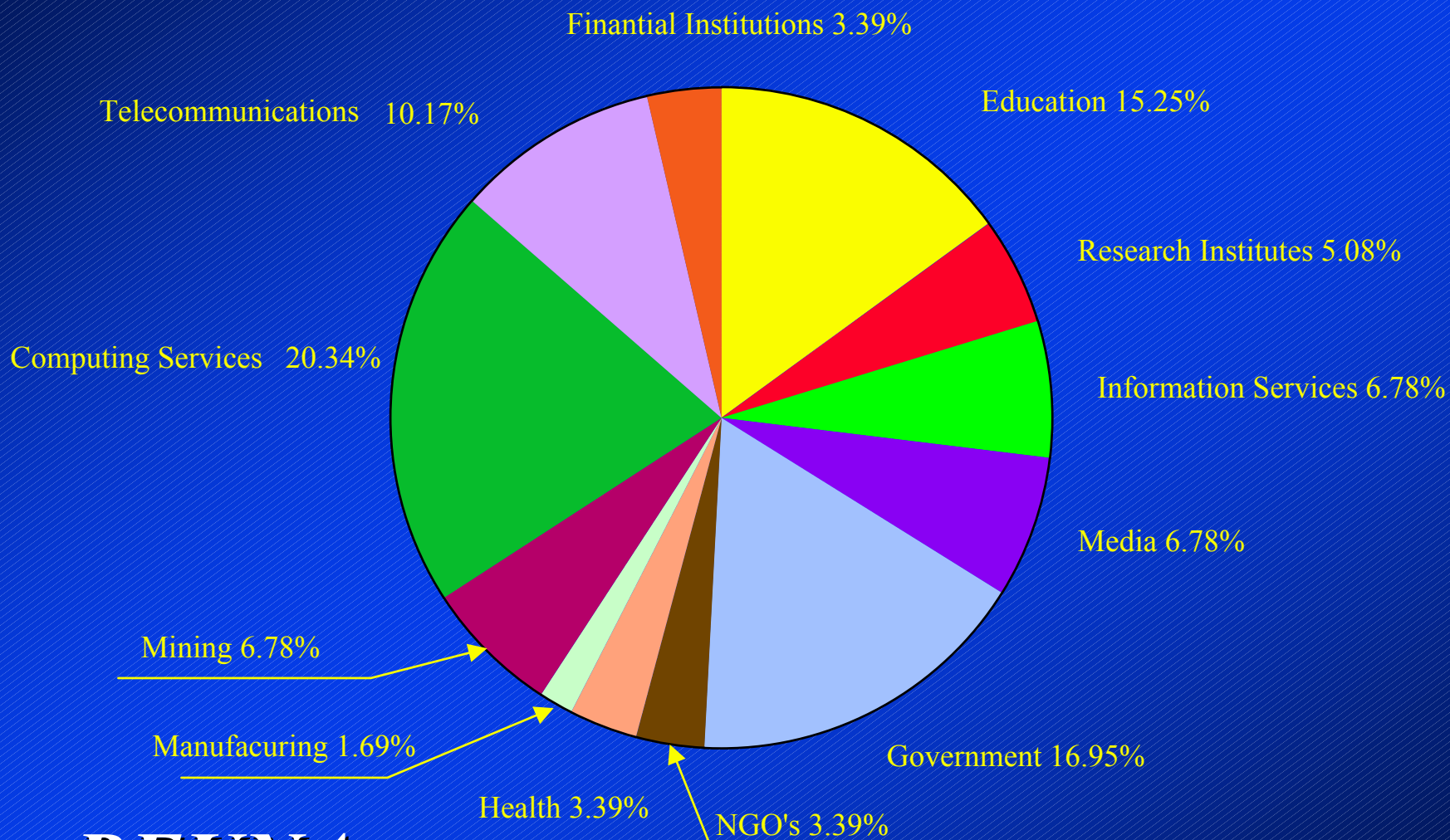


**REUNA**

**Chile**

# Customer Distribution

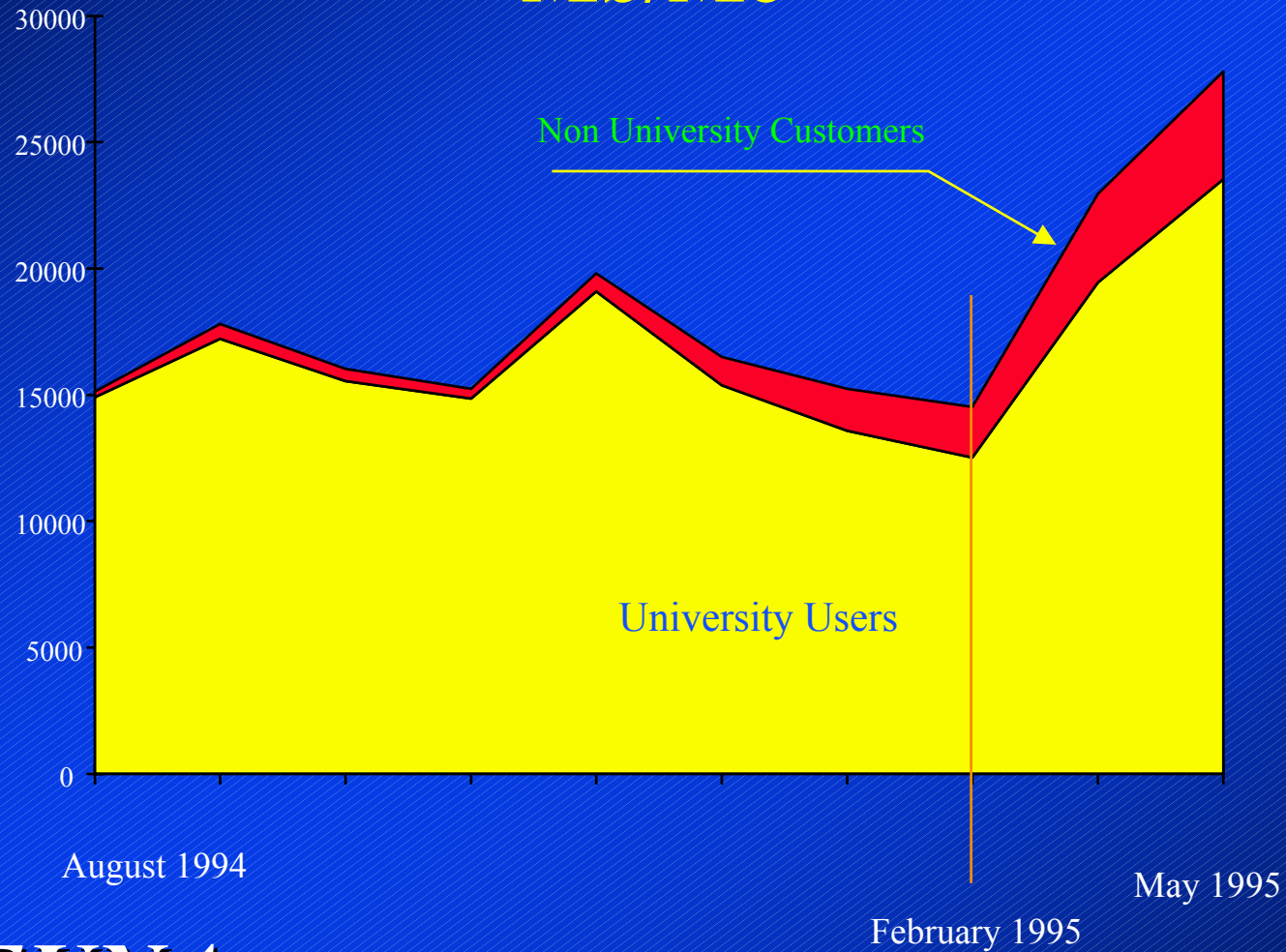
REUNA Members not Included



**REUNA**

**Chile**

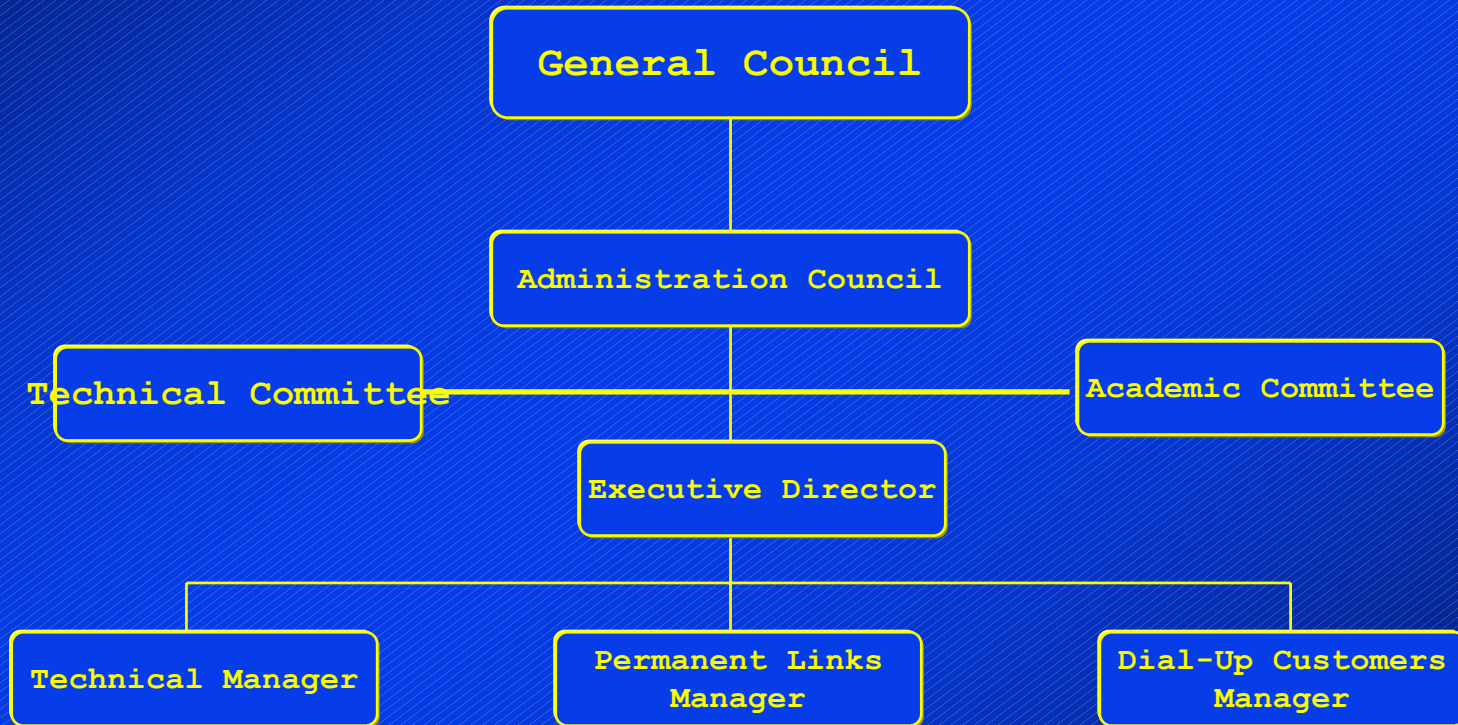
# REUNA's International Traffic in Mb/Mo



**REUNA**

**Chile**

# REUNA's Organisation



**REUNA**

Chile

# *REUNA's Legal Structure*

- **Non-Profit Organisation**
- **Ministry of Justice approved structure in July 1994**
- **Independent operation since July 1994**

***REUNA***

**Chile**

# Why Non-Profit ?



Autonomous  
Operation and  
Financing  
Guarantees  
Competitivity

# Virtual Bandwidth: Fast Access/Low Price

- Physical Access can be up to 2 Mbps depending on Customer Needs
- A Virtual Monthly Limit is established according to Customer's Prevision of Traffic
- Limits are studied every 6 months
- A 10% average overflow is allowed
- If limit is exceeded over 10% in average, a new limit is established

# Reuna en Cifras

- 60 Instituciones Conectadas En Línea
- 250 Clientes Externos
- 21 GigaBytes Mensuales de Tráfico
- Enlaces en Chile a 9.6, 19.2 y 64 Kbps
- Enlace Internacional a 512 Kbps

**REUNA**

Chile