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Communication, Management and  
Information Technology  
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The Telecommunication  
Sector in Brazil



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# Agenda

- Introduction
- Preliminaries
- Telecommunication Market
- Scientific Societies
- Concluding Remarks



# Introduction

- This report presents the status of the telecommunication activities in Brazil, regarding the statistics of telecom operators, number of service subscribers, revenue and market value of the sector
- It also presents the activities of the main scientific societies, related to the mission of the URSI Commission C

# Introduction

- Access to Telecommunication Services, in 2014
  - 43.2 million are served by the basic telephone service, an increase of 2.8% over the previous year
  - 257 million use mobile cellular communication services
  - There are 18.3 million users of cable television services
  - Wideband fixed access Internet services comprise 25.6 million users
  - Trunking companies attend 4.3 million users
  - Internet users, 96 million (55% of population)

# Introduction

- Population Access to Services, in 2012
  - 39,121 localities are served by the fixed telephone system, and 17,059 have individual access, and increase from the number of 38,452 localities in 2011
  - 100.0% of the population have access to cellular services, divided into
    - 83.1% served by four or five companies,
    - 2.8% served by three companies,
    - 4.9% served by two companies, and
    - 9.2% served by one company

# Introduction

- **Population Access to Services, in 2012**
  - 100.0% of the municipalities count on mobile communication services
  - 85.3% of the population have access to wideband mobile services
  - 60,512 public schools are connected by the government wideband program
  - The gross operational revenue for the telecommunication sector, for the first quarter, was US\$ 26.6 billion
  - This represents an increase of 10.8%, as compared to the same period in 2011
  - This figure projects a gross operational revenue of US\$ 106.4 billion for the whole year

# Telecommunication Market

- Composition of the telecommunication market, in terms of gross operational revenue, in 2012
  - Industry: US\$ 3.3 billion (35.0%)
  - Fixed operators: US\$ 6.2 billion (a decrease of 8.1%)
  - Fixed wideband providers: US\$ 3.0 billion (6.0%)
  - Mobile personal communication service operators: US\$11.6 billion (14.3%)
  - Cable television providers: US\$ 2.3 billion (33.0%)
  - Trunking operators: US\$ 1.1 billion (12.8%)

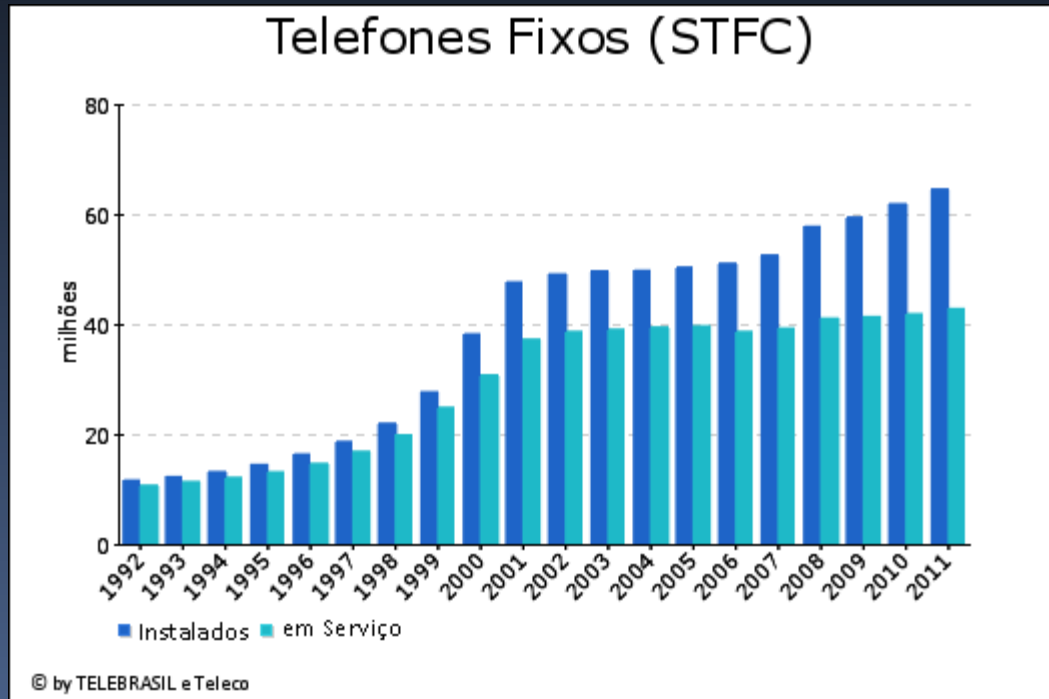
# Telecommunication Market

- Composition of the telecommunication market, in terms of gross operational revenue
  - The gross operational revenue for the telecommunication sector, in 2014, was US\$ 117 billion
  - It is the highest in the history of Brazil, and equivalent to 5% of the country's gross national product (GNP)
  - The telecommunications service providers collected US\$ 30 billion in government taxes in the fiscal year
  - This is equivalent to 46% of their net operational revenue US\$ 17 billion

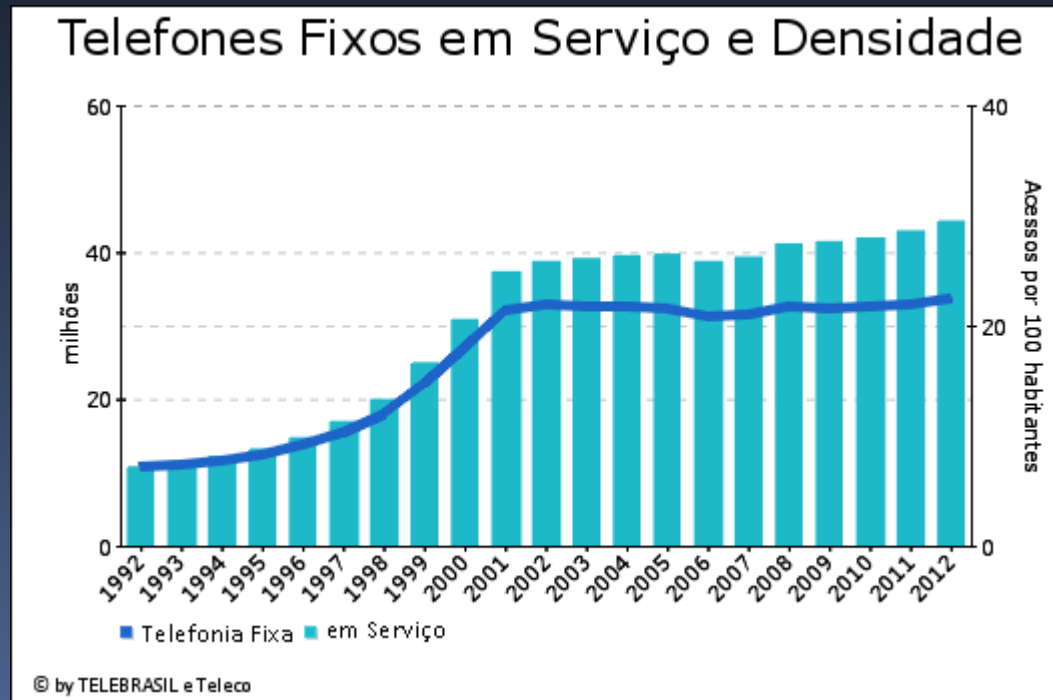
# Telecommunication Market

- Telecommunication Jobs
  - There are 490 thousand employees in the telecom market
    - 26 thousand work in the industry
    - 51 thousand in deployment services
    - 166 thousand in telecommunication services
    - 245 thousand in call centers

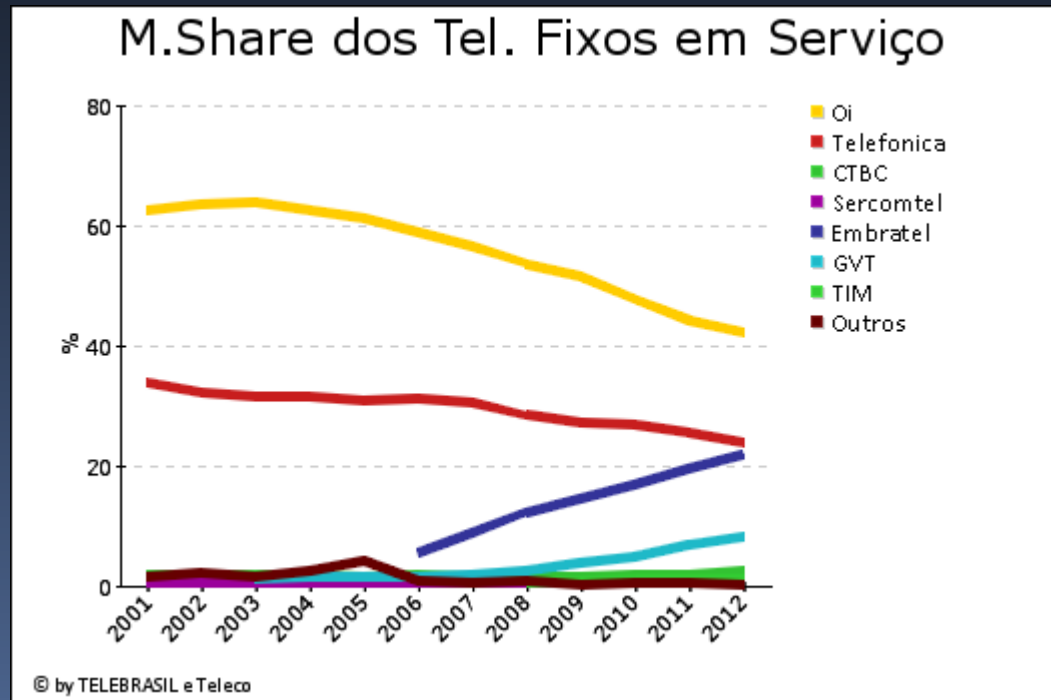
# Fixed Telephony: Deployed and in Service



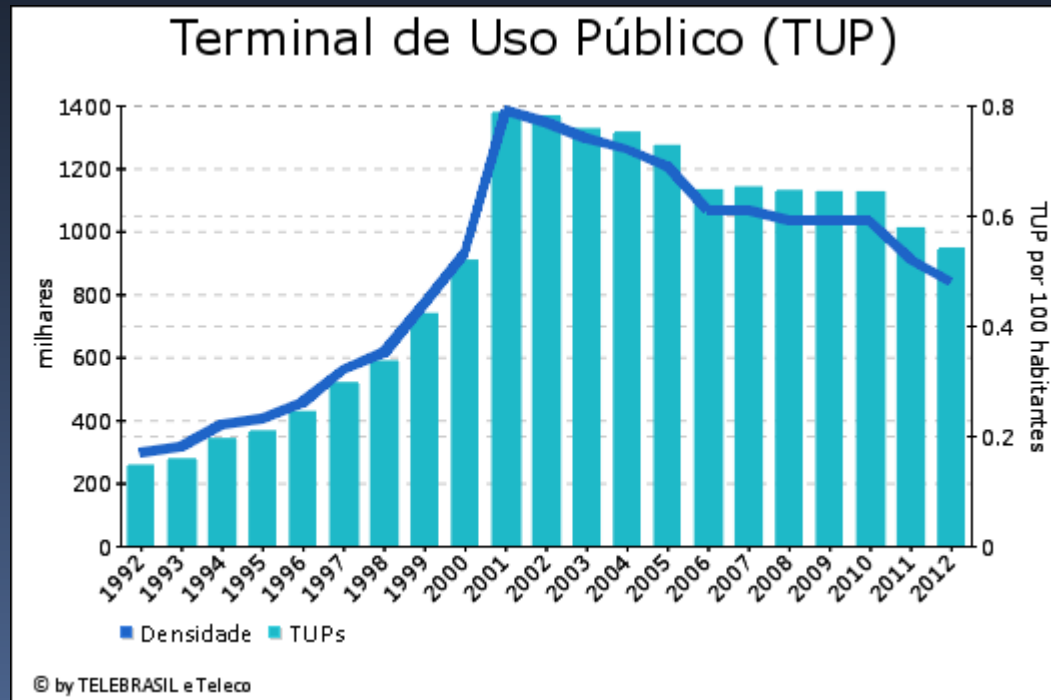
# Fixed Telephony: In Service and Teledensity



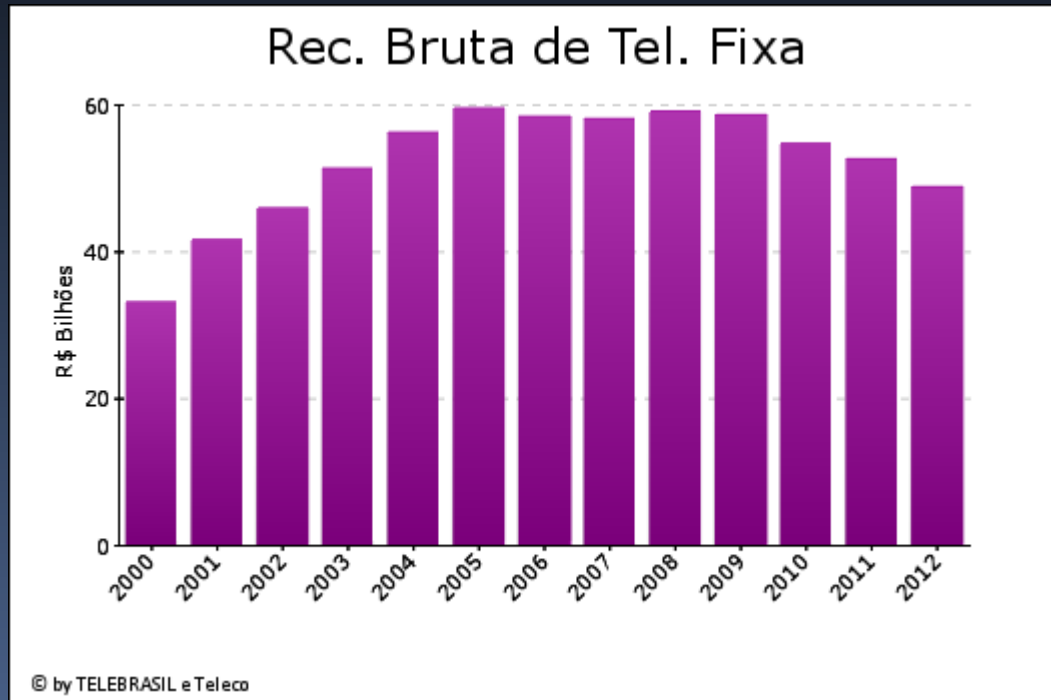
# Market Share for Fixed Telephony



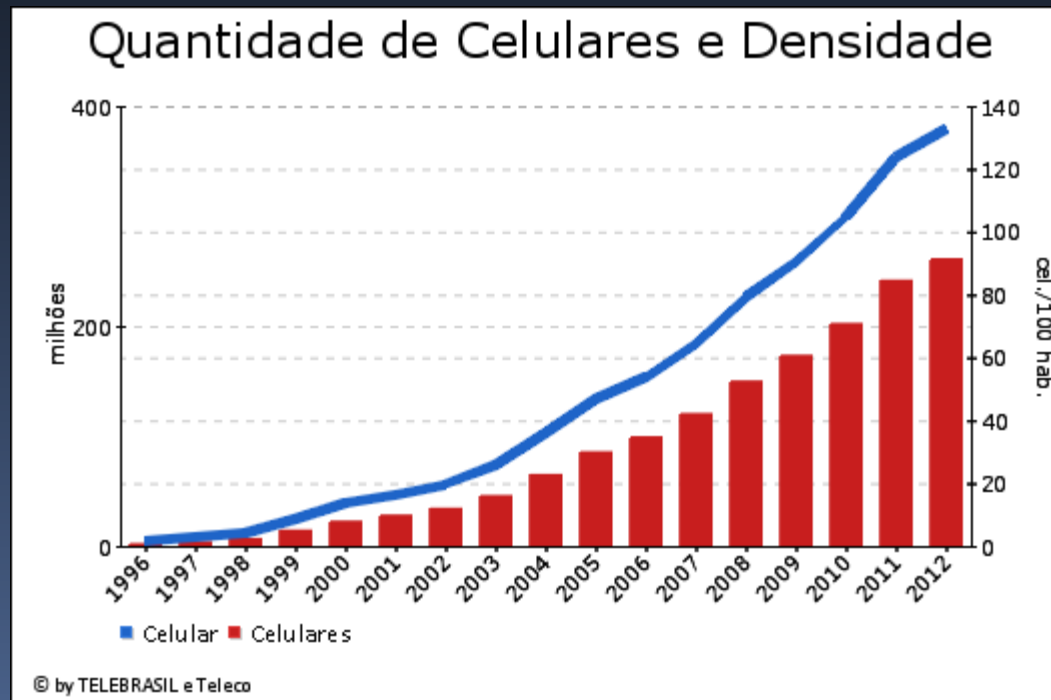
# Public Terminals and Teledensity



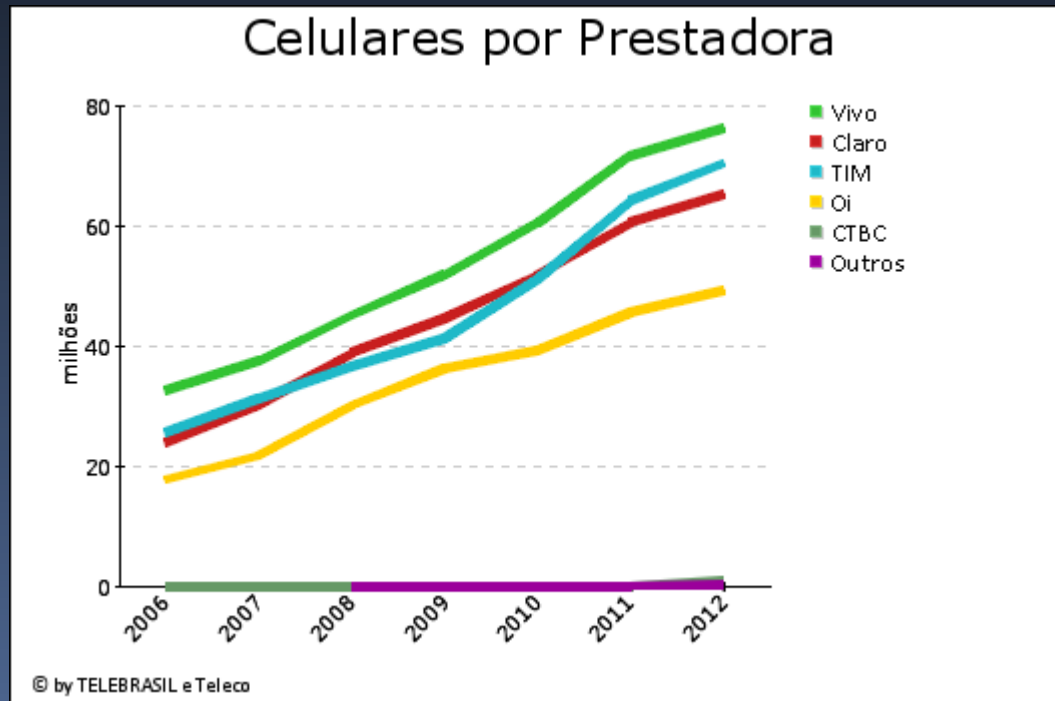
# Gross Revenue for Fixed Telephony



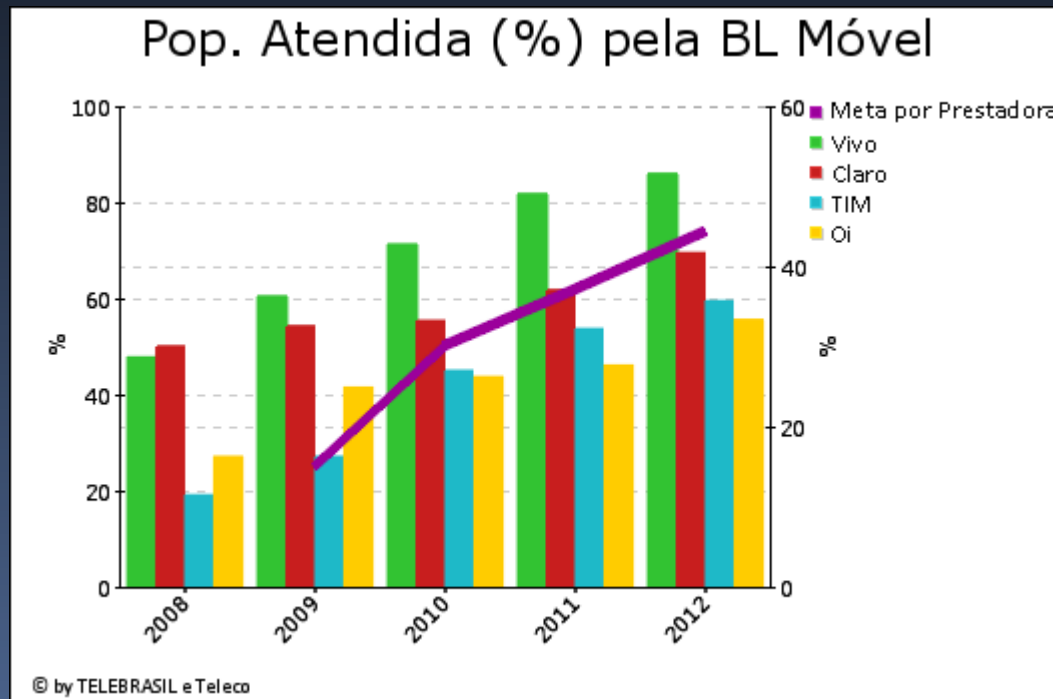
# Celular Telephony: Quantity and Teledensity



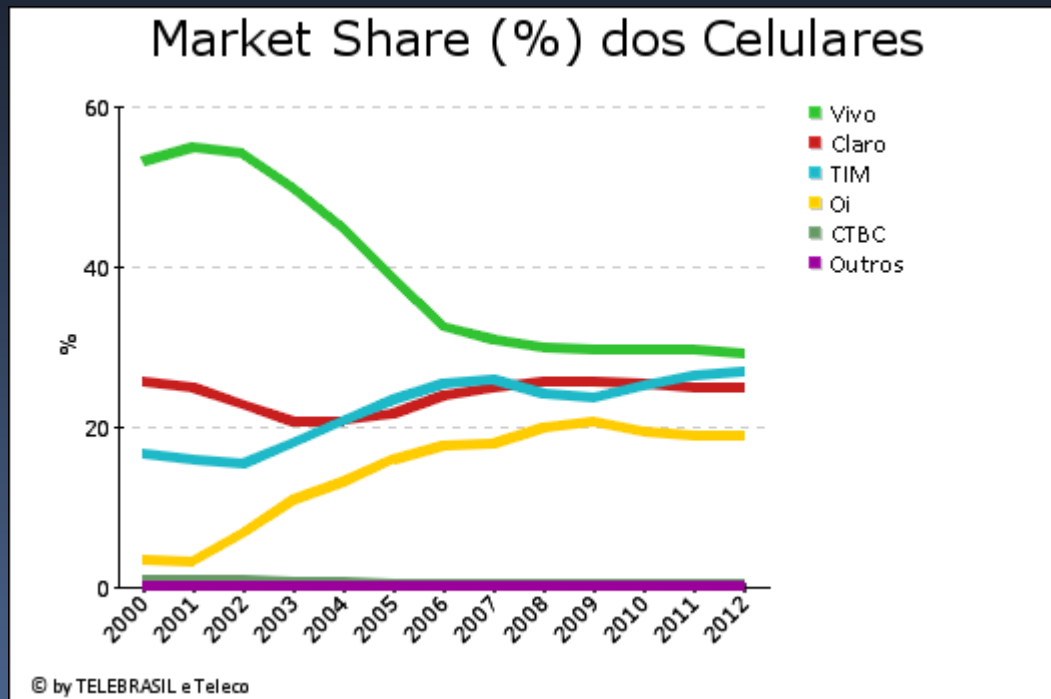
# Cell Phones per Service Provider



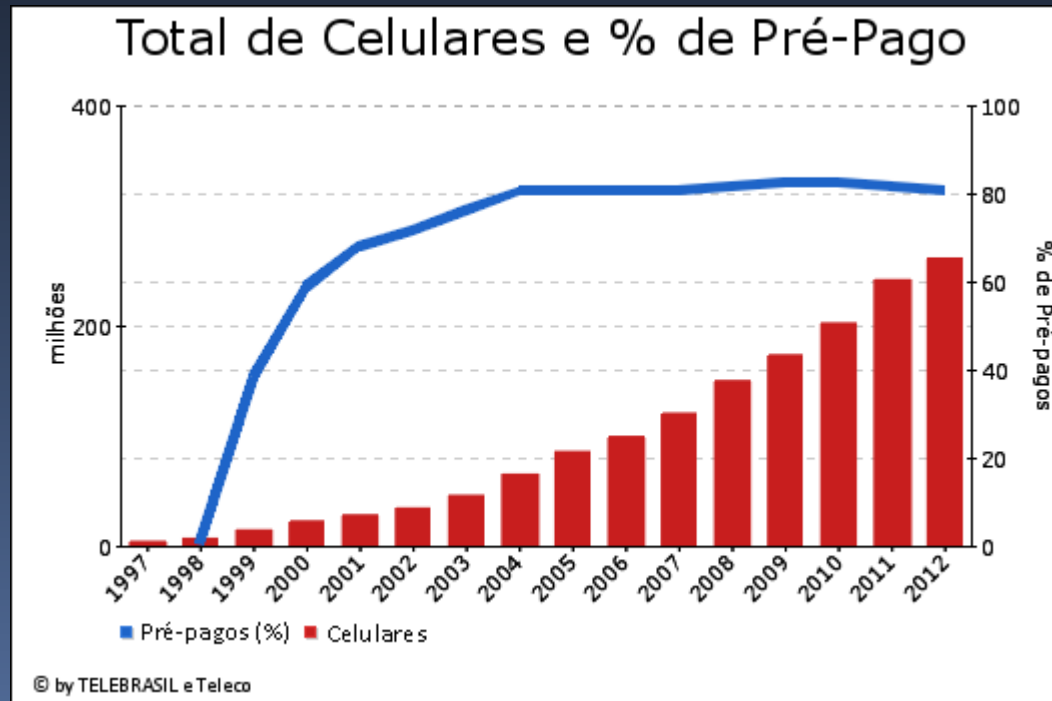
# Percentage of Population Served by Wideband Mobile Service



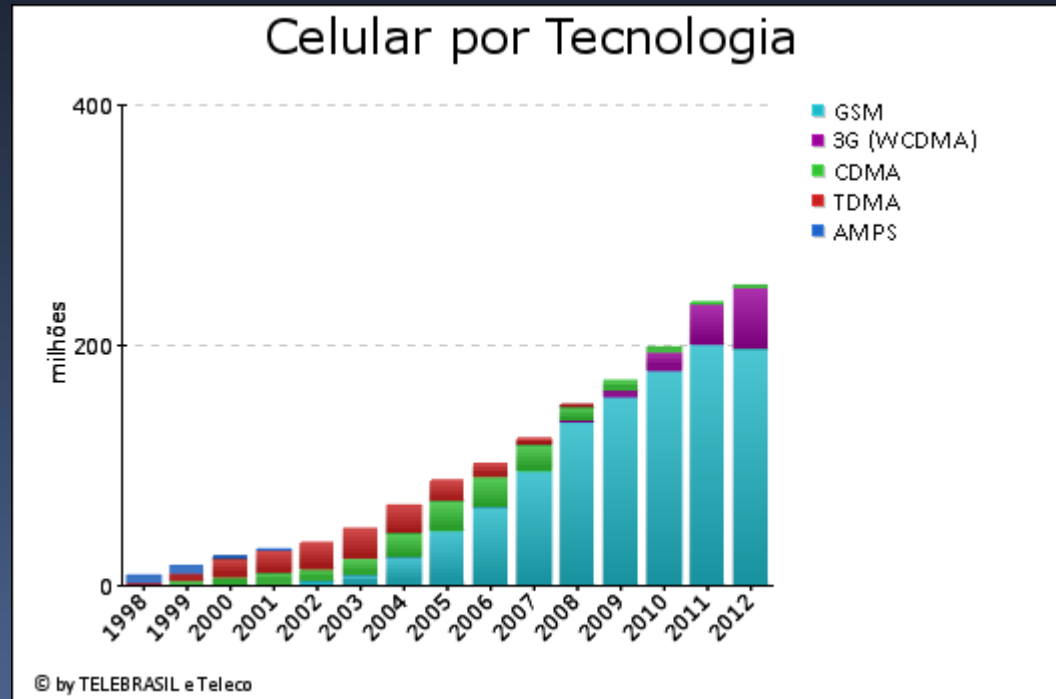
# Market Share for Mobile Cellular Telephony



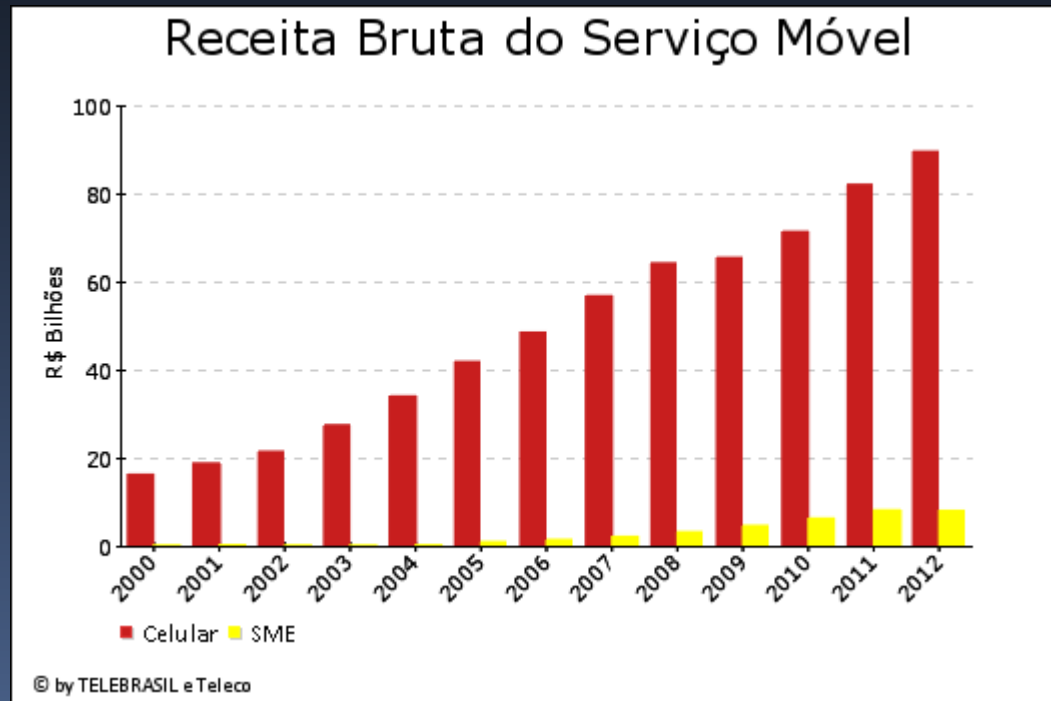
# Total Number of Cell Phones and Percentage of Pre-Paid Phones



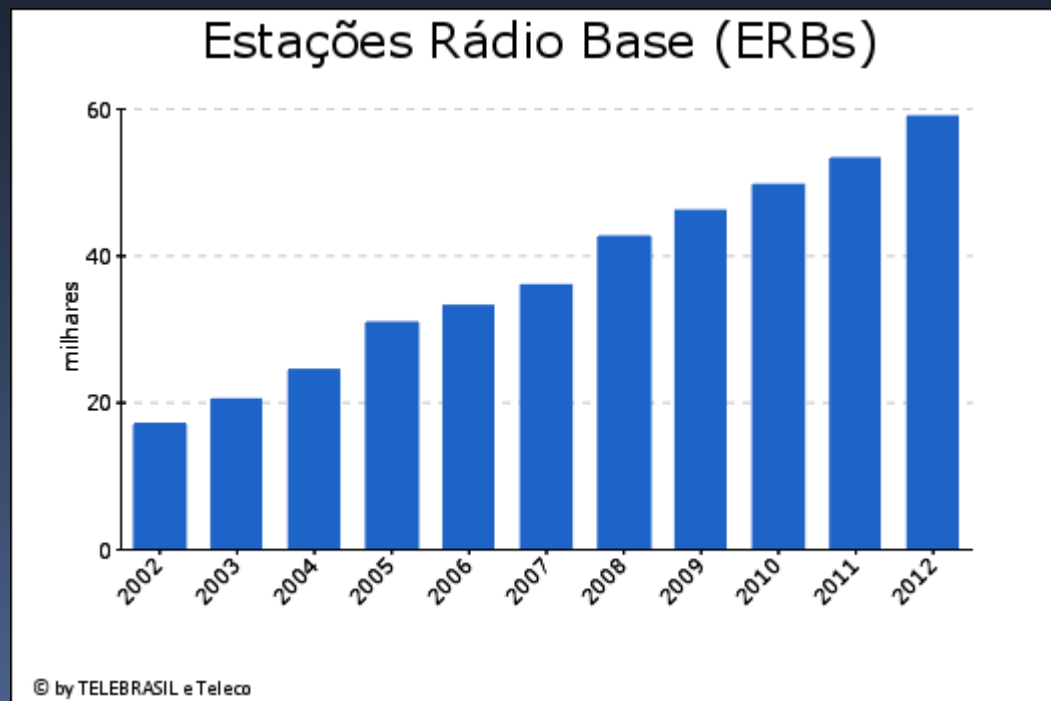
# Total of Cell Phones per Technology



# Gross Revenue for Mobile Service



# Number of Base Stations



# Number of Access Points in Brazil

## Access Points in February, 2013

- Total: 344,5 million access points (+7%)
  - Fixed telephony: 44 million (+2%)
  - Mobile: 263 million (+8%)
  - Fixed wideband: 20,8 million (+14%)
  - Television subscribers: 16,7 (+25%)

# Fixed Telephony in Brazil

## Access Points in February, 2013

- Deployed accesses: 64,7 million
- In service: 44 million (+2,4%)
- Market share of incumbents: 32%
- 22,3 access points per 100 inhabitants
- One million TUPs
- 39,6 thousand municipalities
- More than 240.000 km of optical multifibers

# Cellular in Brazil

## Mobile access points in February, 2013

- 263 million access points (+6%)
- 133 access points per 100 inhabitants
- 80% of cellphones are pre-paid
- 59 thousand BSs, growth rate of 11% in 2012
- Six thousand BSs deployed in 2012, growth rate of 64% in relation to 2011
- 83% of the population live in cities with, at least, four operators
- All Brazilian municipalities are covered by mobile telephony

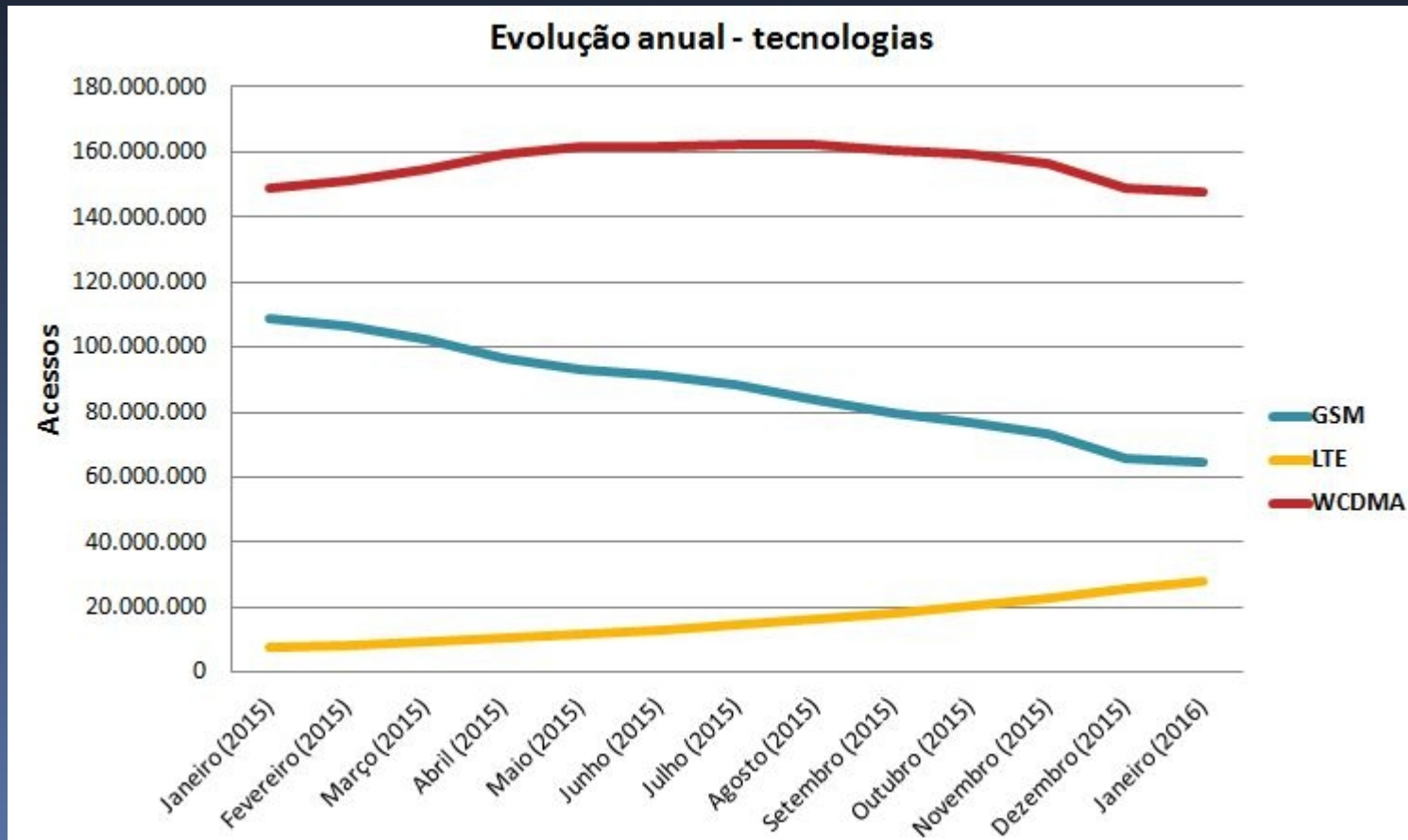
# Cellular Service in Brazil

## Mobile access points in January, 2016

- LTE will overcome GSM, in August , 2016
- 4G reached 28 million access points, in January
- 125 access points per 100 inhabitants
- Total of 257 million access points
- 71% of cellphones are pre-paid
- 60 thousand BSs
- 83% of the population live in cities with, at least, four operators
- All Brazilian municipalities are covered by mobile telephony

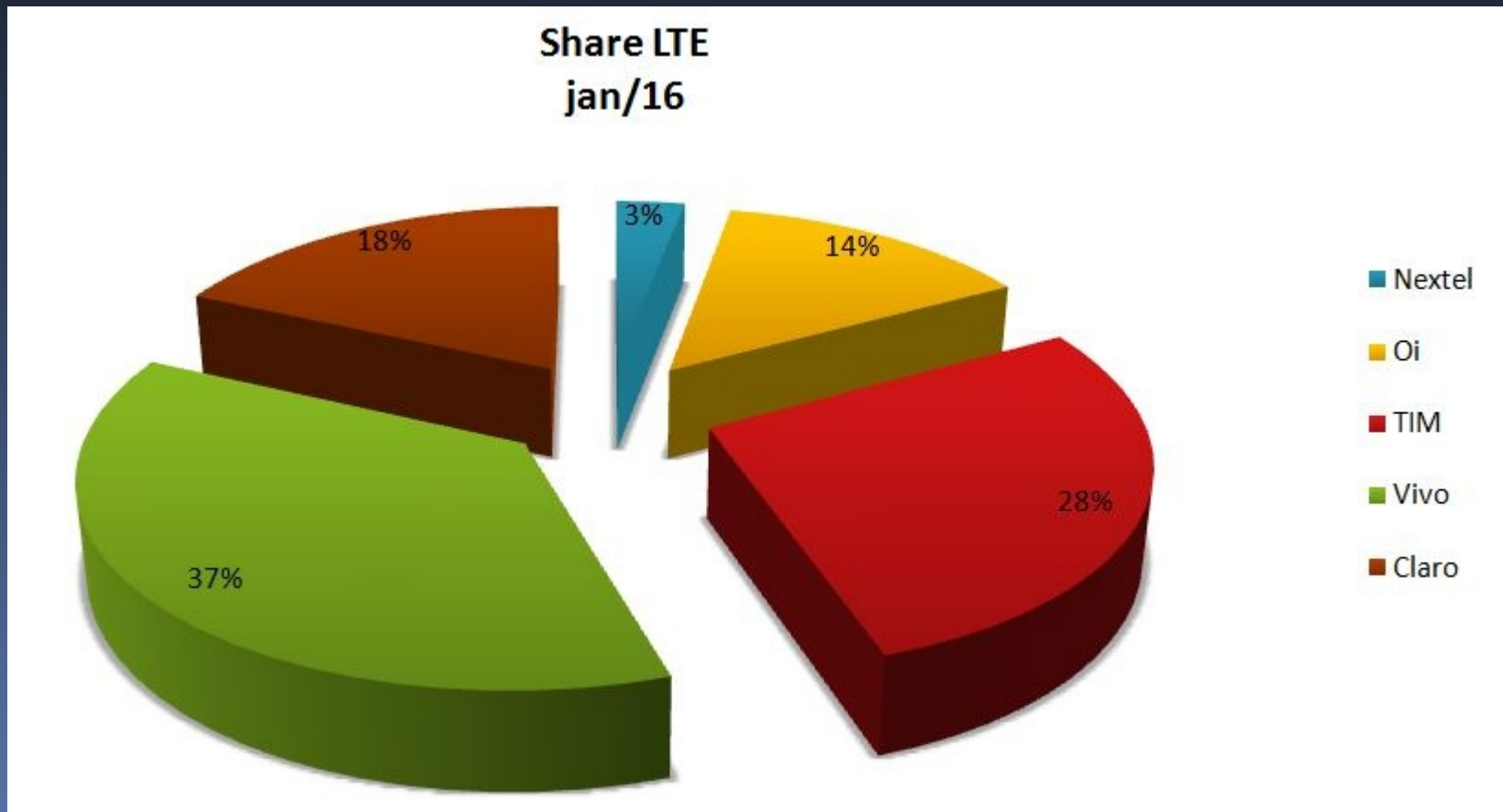
# Cellular Service in Brazil

## Mobile access points in January, 2016



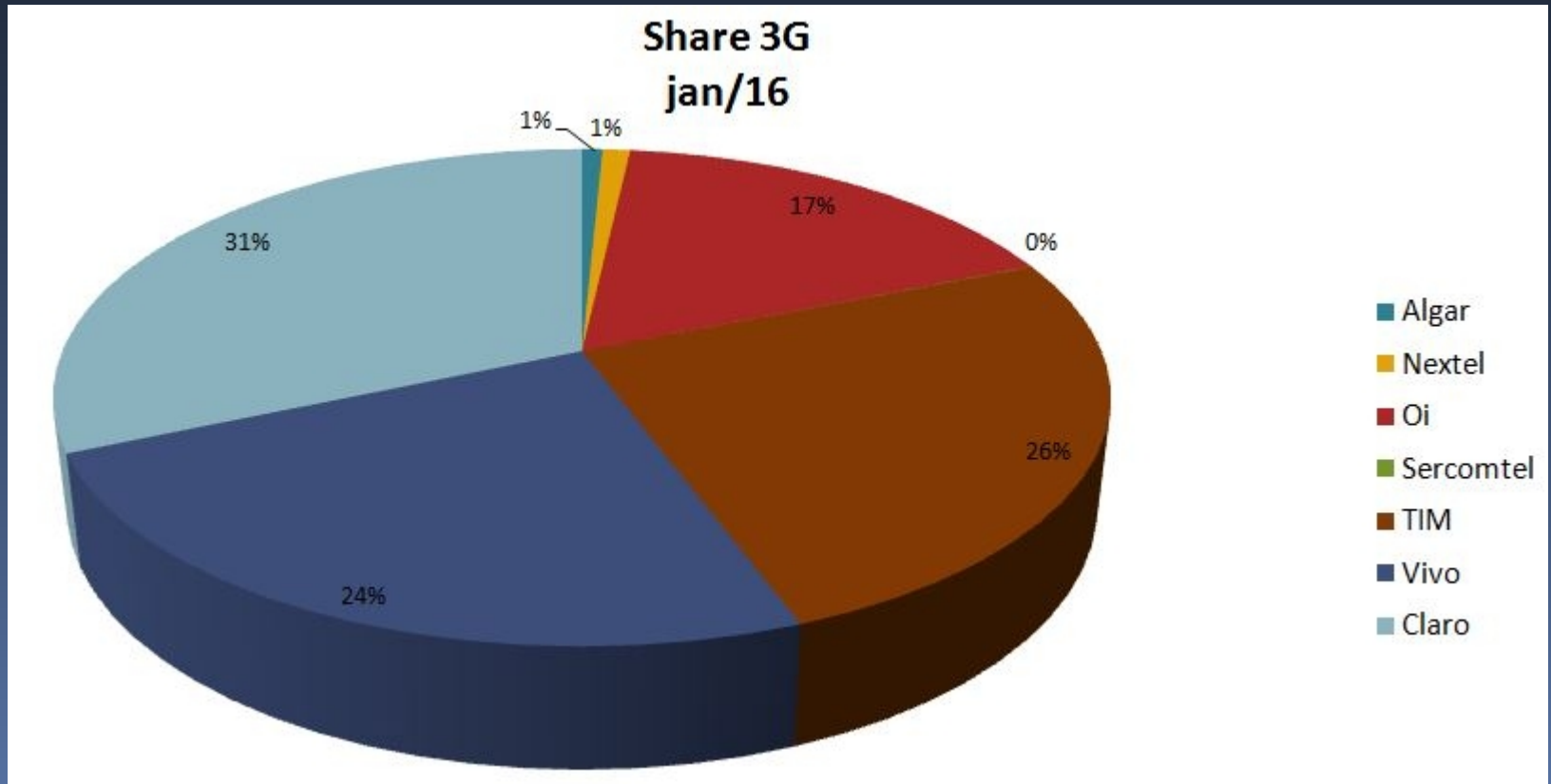
# Cellular Service in Brazil

## Share LTE between operators, 2016



# Cellular Service in Brazil

## Share 3G between operators, 2016



# Cellular Technology

**January, 2016**

- GSM, 64 million accesses
- WCDMA (3G), 147 million accesses
- LTE (4G), 28 million accesses
- CDMA, 2.2 million accesses
- Data terminals, 17 million devices
- Wideband terminals, 6 million devices
- M2M 11 million devices
- Total number of devices, 257 million

# Wideband Transmission

## February, 2013

- 93,5 million, in total
- 20,8 million via fixed telephony
- 72,7 million via mobile telephony
- 58,9 million 3G devices
- 13,8 million data terminals
- 7,1 million *modems* 3G
- 6,8 million M2M *chips*
- 51 new deployments per minute, in 2012
- 26,7 million new access points, in 2012
- 3.315 municipalities covered by 3G
- 88% population attended
- 6,1 Mbit/s: average transmission rate for fixed telephony

# Subscriber Television

**February de 2013**

- 16,7 million access points (+25%)
- 27 access points per 100 houses
- 3,4 million new subscribers, in 2012

# Investment in Brazil

## Investment until January, 2013

- US\$ 137 billion since privatization, including licenses, valued at US\$ 18 billion
- Average of US\$ 9 billion per year, since 1998
- Investment of US\$ 11,5 billion in 2011, an increase of 21,7% in relation to 2010
- Investment of US\$ 11 billion, in 2012

# Gross Revenue in the Sector

## Until January, 2013

- US\$ 100 billion, in 2011, or 5% of the Brazilian GNP, an increase of 10% in relation to 2010
- US\$ 107 billion, in 2012
- **Industry**: US\$ 9 billion, 23% bigger than previous year
- **Fixed Telephony**: US\$ 18 billion, 9% smaller than previous year
- **Fixed Wideband**: US\$ 8.5 billion, 10% bigger than previous year
- **Mobile Telephony**: US\$ 33 billion, 10% bigger than previous year
- **Subscriber TV**: US\$ 7.5 billion, 24% bigger than the previous year
- **Specialized Mobile Service**: US\$ 3 billion, 1% smaller than the previous year

# Revenue from Sectorial Funds

- US\$ 31 billion were allocated to the funds since 2001
  - **Fistel**: US\$ 22 billion
  - **FUST**: US\$ 7 billion
  - **Funttel**: US\$ 2 billion
- Only 7% of the total was used in 2012
- US\$ 4 billion were collected, in 2012
  - **Fistel**: US\$ 2.3 billion
  - **FUST**: US\$ 1 billion
  - **Funttel**: US\$ 0.25 billion
- In 2011, TFF Fistel collected US\$ 1.5 billion, and the Anatel budget was US\$ 170 million, a growth rate of 11%

# Taxes

- US\$ 234 billion collected, since 2000
- US\$ 28.5 billion, in 2011, representing 46% of the net revenue
- In 2000, taxes represented 34% of the net revenue, an increase of 40%
- In 2012, US\$ 30 billion were collected, 6% more than in the previous year
- US\$ 16.2 billion were collected for IVA, in 2011, 10% of the total IVA

# Activities of the Scientific Societies and Institutions

## Scientific Events

- The SBMO Microwave and Optoelectronics Symposium (MOMAG 2016) is a biennial forum on telecommunication science, technology and innovation, sponsored by the Brazilian Microwave and Optoelectronics Society (SBMO)
- In its seventeenth edition, the conference will be held in the city of Porto Alegre, August 2015
- The general chair are Ály Ferreira Flores Filho and Aleksander Sade Paterno
- The technical program chairs are Jean Viane Leite and Marcelo Segatto
- Webpage: <http://www.ufrgs.br/momag2016/>

# Activities of the Scientific Societies and Institutions

## Scientific Events

- The Brazilian Telecommunications Symposium (SBrT 2016) is an annual event sponsored by the Brazilian Telecommunications Society (SBrT)
- In its 34th edition, the symposium will be held in Santarém, Pará State, from August 30 to September 2, 2016
- The general chairs are João Weyl and Ugo Dias
- The TPC chairs are Aldebaro Klautau and Max Costa
- Webpage: <http://www.sbrt.org.br/sbrt2016/>

# Activities of the Scientific Societies and Institutions

## Scientific Events

- The third Annual Meeting of the Iecom on Communications, Networks and Cryptography (ENCOM 2016) will be held in Fortaleza, from October 7 to 8, 2016, under the sponsorship of the Institute for Advanced Studies in Communications (Iecom), IFCE, UFC, UFPE, UFPB and UFCG.
- It also receives support from Datashop and Rohde & Schwarz
- The general chairs are Marcelo Sampaio de Alencar and João Cesar Moura Mota, and the technical program chairs are Wamberto José Lira de Queiroz, and Charles C. Cavalcante

# Activities of the Scientific Societies and Institutions

## Journals Published

- The Journal of Communication and Information Systems (JCIS) features high-quality, peer-reviewed technical papers in several areas of communications and information systems
- It is published since 1983
- The JCIS is jointly sponsored by the Brazilian Telecommunications Society (SBrT) and the IEEE Communications Society (ComSoc)
- The Steering Committee includes renowned scholars from the international and the Brazilian Communities
- The editors are Renato Rocha Lopes, Charles C. Cavalcante and Mérouane Debbah

# Activities of the Scientific Societies and Institutions


## Journals Published

- The Journal of Microwaves, Optoelectronics and Electromagnetic Applications (JMOf) is published by the Brazilian Microwave and Optoelectronics Society (SBMO) and Brazilian Society of Electromagnetism (SBMag)
- It is a refereed publication to disseminate technical information in the areas of Microwaves, Optoelectronics, Photonics, and Electromagnetic Applications
- The journal is published in electronic format since 1997. The editors are Maria Thereza Miranda Rocco Giraldi and Renato Cardoso Mesquita
- The JMOf is indexed in the following bibliographic databases: SciELO, SCOPUS, SIMAGO, EMBASE, Engineering Village, Reaxys, Sumarios.org and Directory of Open Access Journals (DOAJ). It is also part of the Scientific Electronic Library Online-SciELO's collection

# Activities of the Scientific Societies and Institutions

## Journals Published

- The Journal of Information and Communications Technology (RTIC) is published by the Institute for Advanced Studies in Communications (Iecom)
- The journal is published in electronic and printed formats since 2011
- The RTIC is registered by DOI and was awarded a Capes Qualis B5 classification
- The editor-in-chief are Wamberto José Lira de Queiroz and Waslon T. Araújo Lopes



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