

SESSION ON ICT CONFORMANCE AN  
INTEROPERABILITY: CHALLENGES FOR  
DEVELOPING COUNTRIES

**INFRASTRUCTURE FOR CONFORMANCE AND  
INTEROPERABILITY**

**THE RELEVANCE OF TESTING**  
ITU D- SG2\_Q4/2– OCT/2019



**Connect to the new**



# AGENDA

- **Introduction**
- **CPqD History**
- **Importance of Test Laboratory**
- **Telecom Product Homologation**
- **Other Benefits of Existing Test Lab**
- **The CPqD and ITU Cooperation – C&I**
- **Conclusion**



# INTRODUCTION

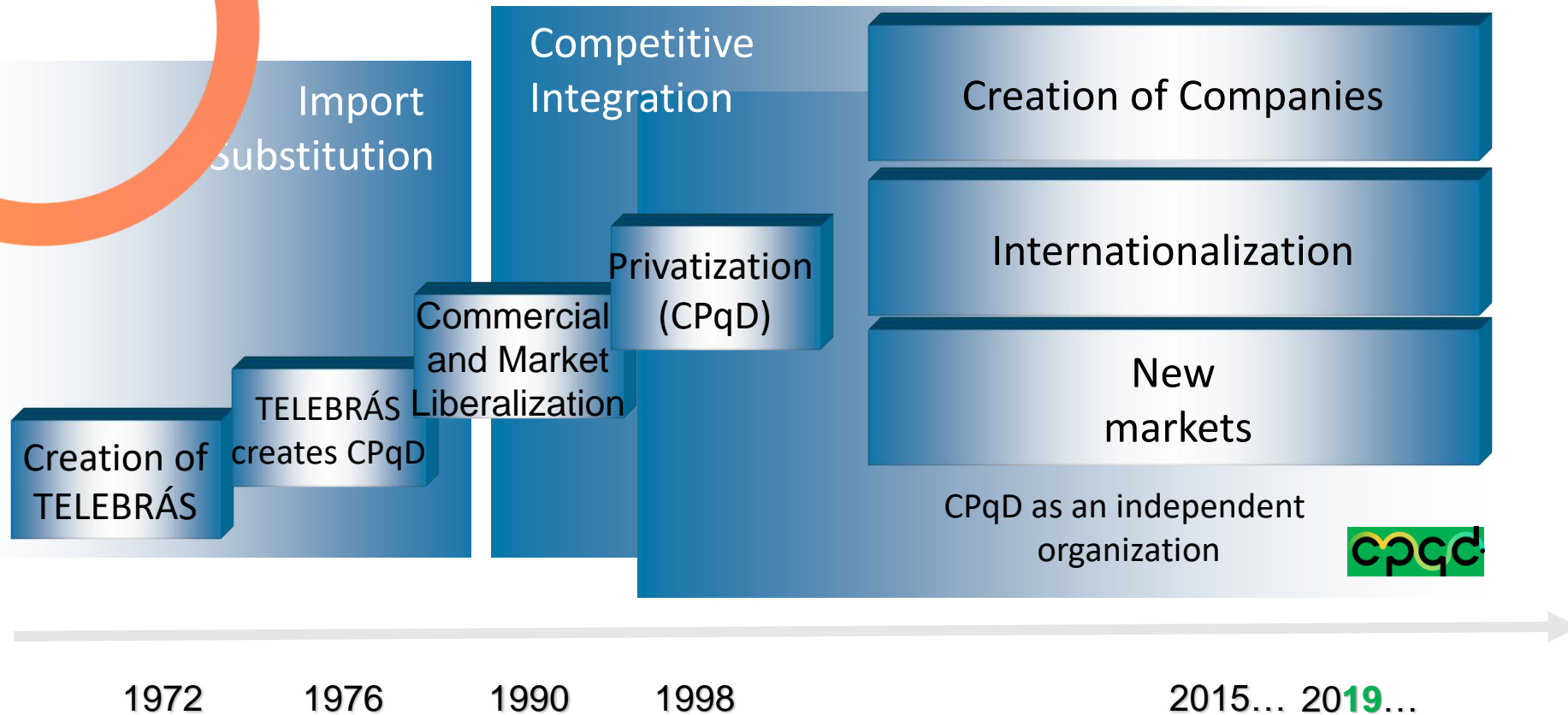
The purpose of this presentation is to provide an overview of the importance of testing laboratories and telecommunication compliance testing according to CPQD experience.



CPQD



# CPQD History

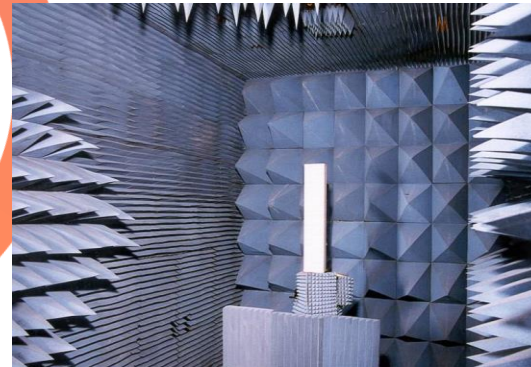




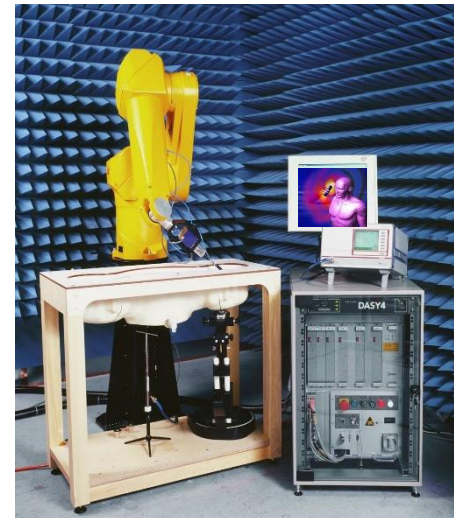
# CPQD History

## CPQD TEST LABS

- Acoustic
- Antennas
- Batteries
- Cables
- Colorimetry
- Corrosion
- Chemical
- Climatic
- EMI/EMC
- Full Conformance – LTE and LTE-A
- Protocol and Communication Interfaces
- Optical Fiber and Optical Equipment



- Materials
- Radio and Signaling
- RFID
- Safety
- SAR

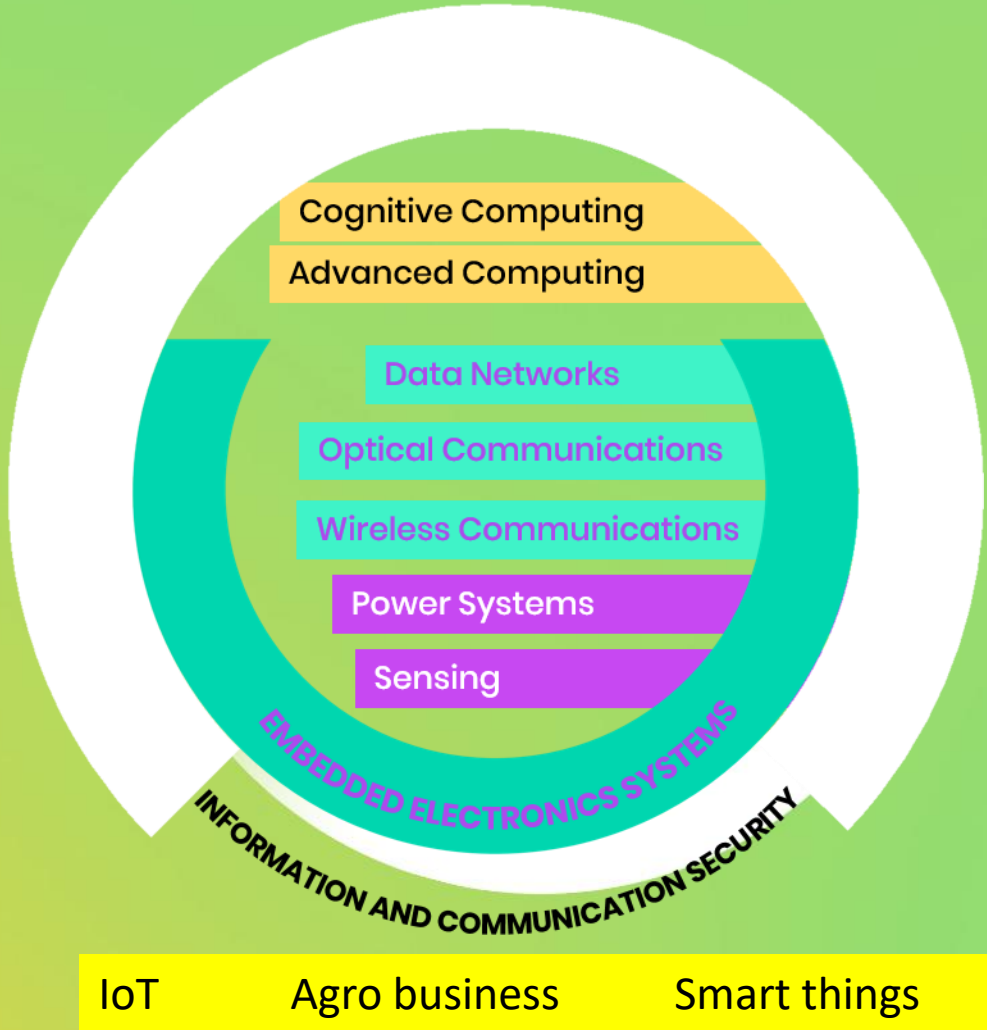


LABORATORIES  
ACCREDITED BY  
CGCRE

More than 850 tests  
accredited by Cgcre\*



# TECHNOLOGY PLATFORMS



## CPqD in numbers

42 years,

360.000 m<sup>2</sup>

over 300 customers  
and 897 employees.

334 post-graduates,

473 college graduates and

90 high school graduates.



## IMPORTANCE OF THE TEST LABORATORY

- Test laboratories are essential in R & D and Innovation activities.
- They support the Conformity Assessment Process established by the regulations issued by Anatel.
- The test laboratories contribute to the development of the national industry by providing inputs that enable product design, validation and improvement of technical solutions.
  - Development on EMI/EMC and safety tests regarding new products and new technologies.
  - Support to growth of knowledge on ICT new technologies.
  - Important for market surveillance.
  - EMI and EMC analysis of equipment and environment.
  - For training human resources.



## TELECOM PRODUCT HOMOLOGATION

**1972**

Creation of TELEBRAS.

**1974**

Designation as holding of the Brazilian Telecommunication System (Telebrás System).

**Development of Telebrás Standardization(\*).**

**Telebrás Qualification System(\*).**

**1998**

Privatization of Telebrás System and Creation of Anatel.

**NGT 004/1991 – General Telecommunication Standard(\*).**

**(included declaration of conformity)(\*).**

**2000**

Resolution 242 – Anatel - valid from 01.06.2001.

**Approval of a certification e homologation model(\*).**

**Issued of Resolutions regarding EMC and safety(\*).**

**Issued Resolutions and/or requirements regarding functional aspects(\*).**

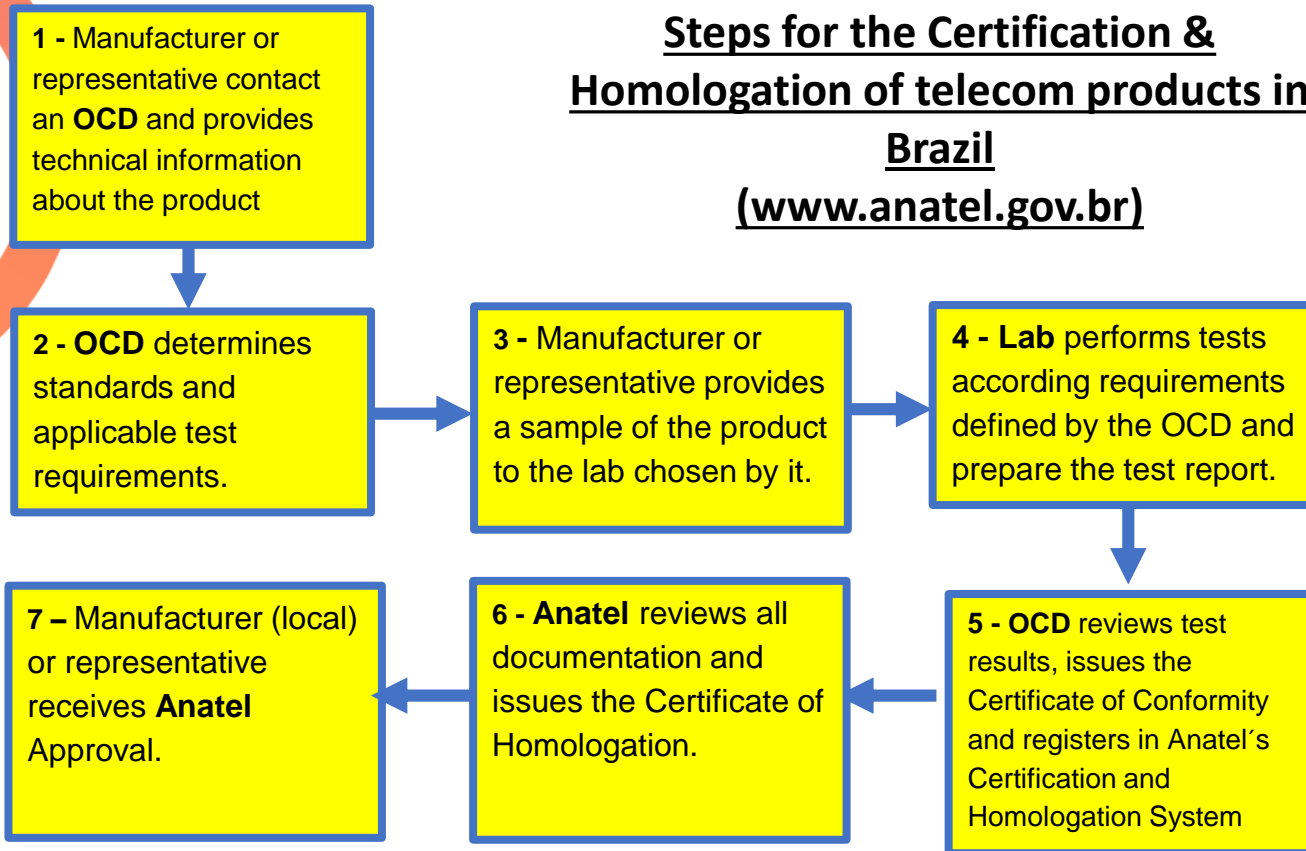
(\*) related to product homologation





# TELECOM PRODUCT HOMOLOGATION

## Steps for the Certification & Homologation of telecom products in Brazil ([www.anatel.gov.br](http://www.anatel.gov.br))



OCD – Designated Certification Organization



## TELECOM PRODUCT HOMOLOGATION

- The process of homologation is based on tests of conformity assessment mainly performed by third party labs in Brazil.
- Some feedbacks in 19 years of applying Anatel's regulations in Brazil:
  - Depending on the product type, 6% to 20% of imported product fails in one or more requirements.
    - Some parts are replaced by local components and circuit are changed for cost reduction without proper care causing fails in some requirements.
    - Changes in the firmware can affect the hardware performance or emission of radiofrequencies and spurious (For instance: arduino etc).
  - Tests of certification maintenance (done 1 or 2 years after the first certification), around 30% of product fails in one or more requirement.



## TELECOM PRODUCT HOMOLOGATION

- Fails in tests of protocol.
- Problems of RF power level in extreme conditions of temperature.
- Fails in DFS (Dynamic Frequency Selection) operation.



# TELECOM PRODUCT HOMOLOGATION

- Unexpected fail results in EMC (Electromagnetic Compatibility) tests – emission and immunity
  - Phenomena that can impact RF ambient and the use of wireless devices in several applications.
- Unexpected fail results in Safety test (including also the batteries test).
- Fails results in SAR (Specific Absorption Rate) of wireless devices.



## TELECOM PRODUCT HOMOLOGATION

**In the report:** TIC FEDERATIONS CONSUMER PRODUCT MARKET SURVEY – 1998 ) published by IFIA (International Federation of Inspection Agencies) and CEOC (Confederation of Inspection and Certification Organizations ) the results of the market survey in EU and USA show that third-party certification provided higher levels of compliance and lower levels of dangerous faults against applicable requirements when compared to supplier declaration of conformity: Self-declared products presented 17% dangerous faults, compared to <1% dangerous faults for products that were third-party certified.

[http://www.ifa-federation.org/content/wp-content/uploads/IFIA\\_CIPC\\_239\\_2014-2016\\_Market\\_survey\\_report.pdf](http://www.ifa-federation.org/content/wp-content/uploads/IFIA_CIPC_239_2014-2016_Market_survey_report.pdf)

**Important:** Despite the products chosen in this survey were household appliances and even other study limitations , the history verified during the application of Anatel's regulation indicates that the same situation would occur if the Resolution 242 didn't considering to use third party accredited labs.



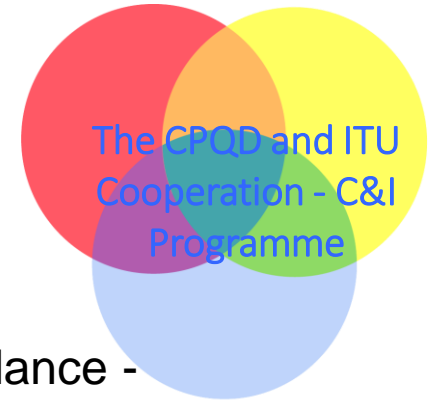
## OTHER BENEFITS OF EXISTING TEST LABS

- There are currently more than 25 third-party labs in Brazil involved in product certification and among them 12 labs are strongly engaged in Research, Development and Innovation, offering technological solutions in a wide range of business segments and seeking solutions to meet the needs of the market, companies and society.
- More than 500 projects in the last 18 years were developed in several areas such as power generation and transmission systems, financial sector, government, telecommunications, information technology, military, medical, agribusiness, oil and other areas.



## CPQD AND ITU COOPERATION

- ITU Training Course on C&I Testing for the Americas Region:
  - Test on EMC - 24-28 June 2013, Campinas (Brazil)
  - Test of Mobile Terminal - 12-16 May 2014, Campinas (Brazil)
  - Test of Mobile terminal, NGN interoperability testing and Market Surveillance - June 2015, Campinas (Brazil)
  - Test of Mobile terminal, NGN interoperability testing and Market Surveillance, 27 June-1st July 2016, Campinas (Brazil)
  
- Participation in the Forum on the Conformance and Interoperability (C&I) in Innovation for Youths (25-27 June 2018) and Establishing a Mutual Recognition Agreement (MRA) for the Caribbean Countries Workshop (28 -29 June 2018), Port-of- Spain, Trinidad & Tobago.





## CONCLUSION

- Due to increased IoT and smart things solutions, 5G and others, it's possible to conclude that not just the test laboratories are important but also regulations shall be established to guarantee the conformity and interoperability of products.
- As the radio frequency spectrum is a limited resource and it will be shared by the several devices installed in the environment, it shall be taken special attention to EMC, RF and Safety aspects.
- The experience has shown also the conformance assessment through declaration is not so adequate. The experience mentioned in this presentation and several market surveillance happened in Europe and United States has shown the importance of compliance test of products made by third part labs.





**THANK YOU**

**Victor Vellano Neto**

**CPQD – Fundação CPqD**

Tel.: +55 19 3705-7097 / Cel.: +55 11 99606-2326

[vellano@cpqd.com.br](mailto:vellano@cpqd.com.br)

[www.cpqd.com.br](http://www.cpqd.com.br)