


## Benefits for Society



- Intellectual Capital
- Job Creation
- Bargaining Power
- Digital Inclusion
- Wealth Generation



## Operating Model




- R&D Program
- Commercial Operations
- Creation of Companies




## CPqD Approach for Conformity Assessment and Interoperability





- CPqD view for Conformity Assessment and Interoperability
  - Work together with international and Brazilian standardization bodies
    - IEC, ISO, IEEE, 3GPP, etc..
    - ABNT, COBEI
  - Strong investments
    - People
    - Infrastructure



## CPqD Approach for Conformity Assessment and Interoperability

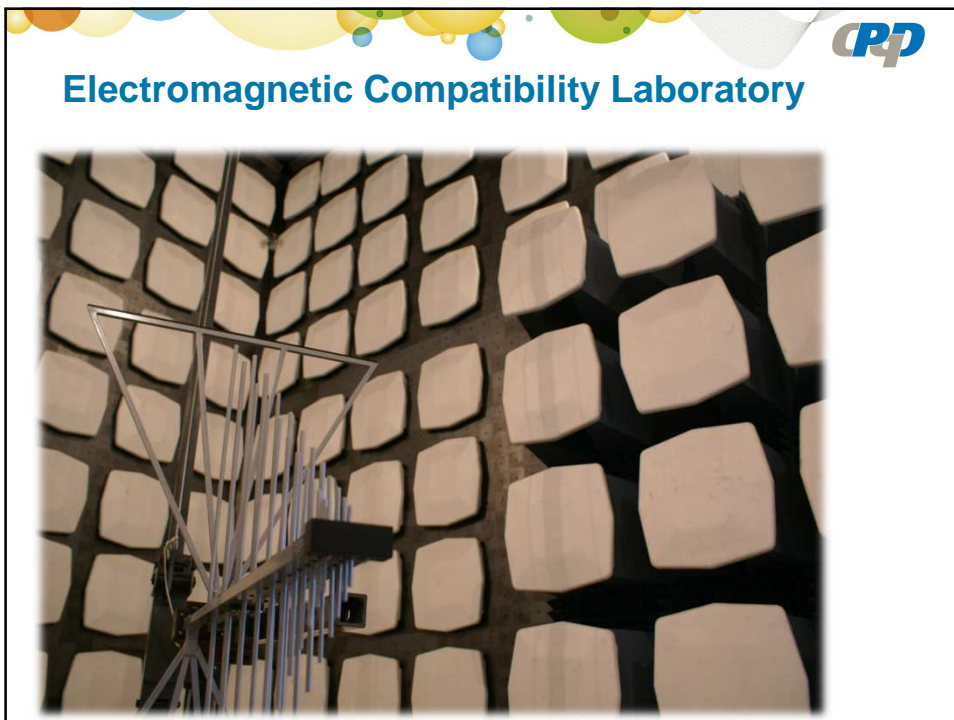
- CPqD view for Conformity Assessment and Interoperability
  - Develop our own procedures for conformity and interoperability
    - Based in international standards
    - Close cooperation with National Regulators
      - Anatel – Brazilian National Telecommunication Agency
      - INMETRO – Brazilian National Metrology Institute
      - ANEEL – Brazilian National Electrical Power Agency

 **Laboratory expertise in a telecom perspective**

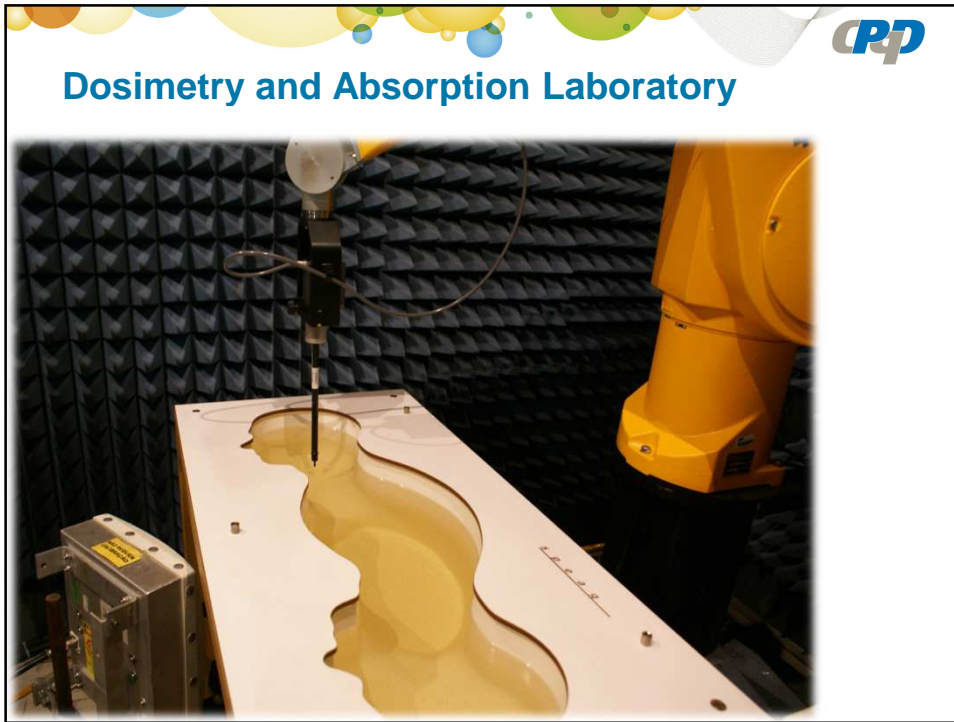
- **Devices and equipment performance** 
- **Material characterization** 
- **Cell phone battery performance** 
- **Network infrastructure** 

 **Laboratory expertise in a telecom perspective**



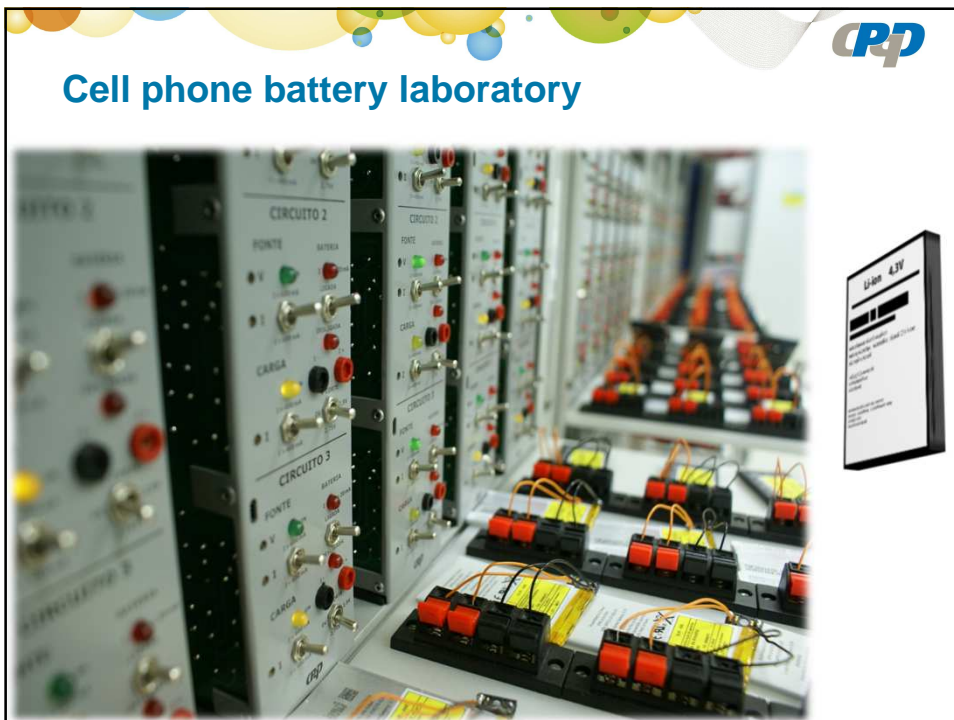


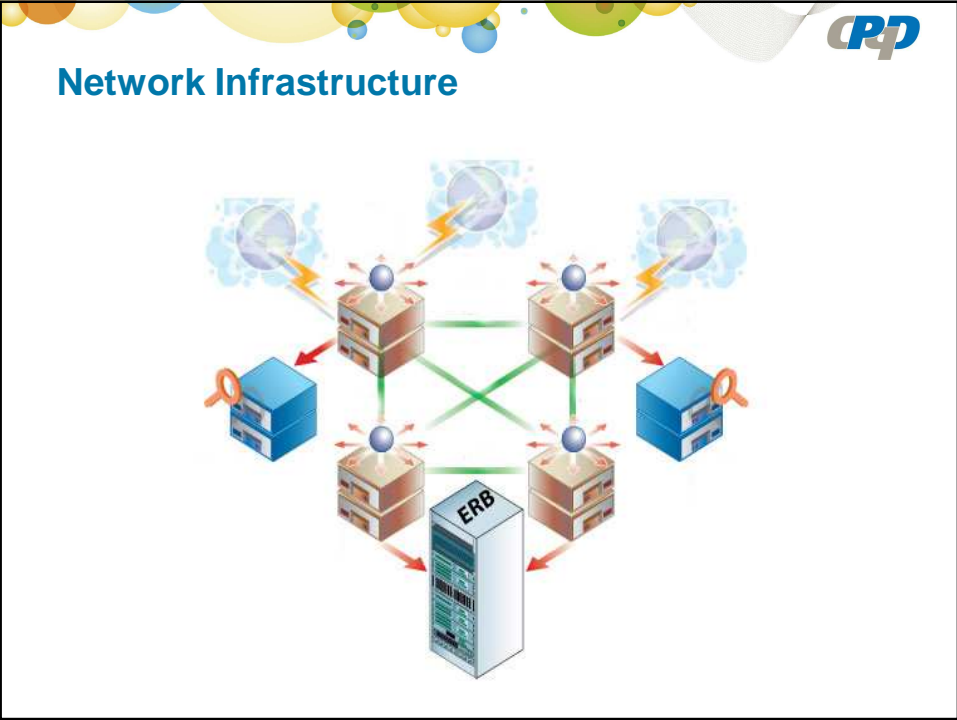
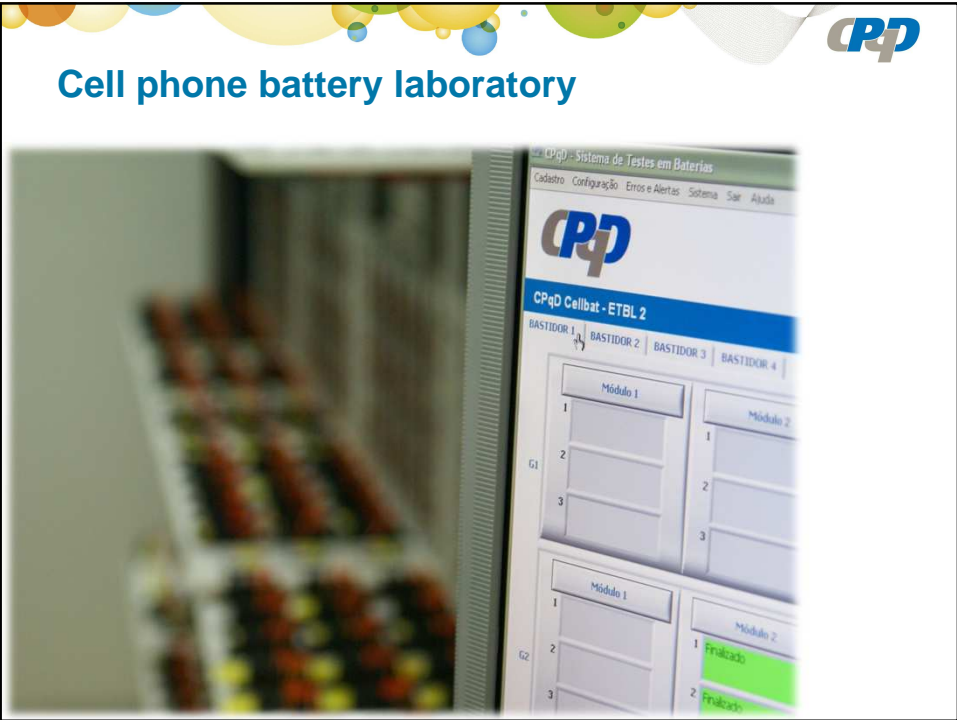




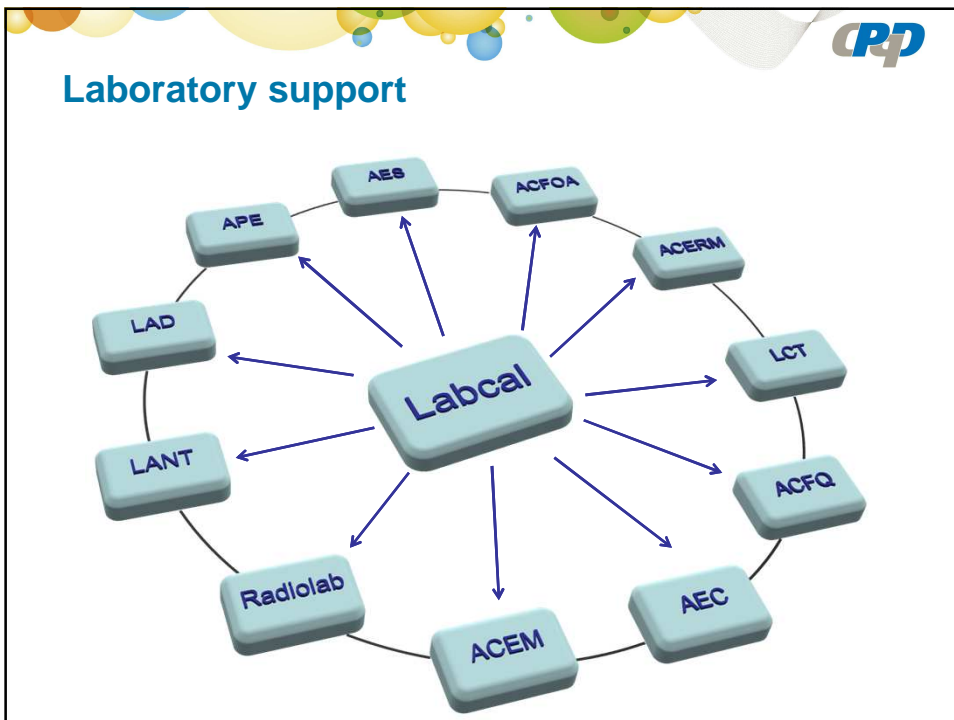


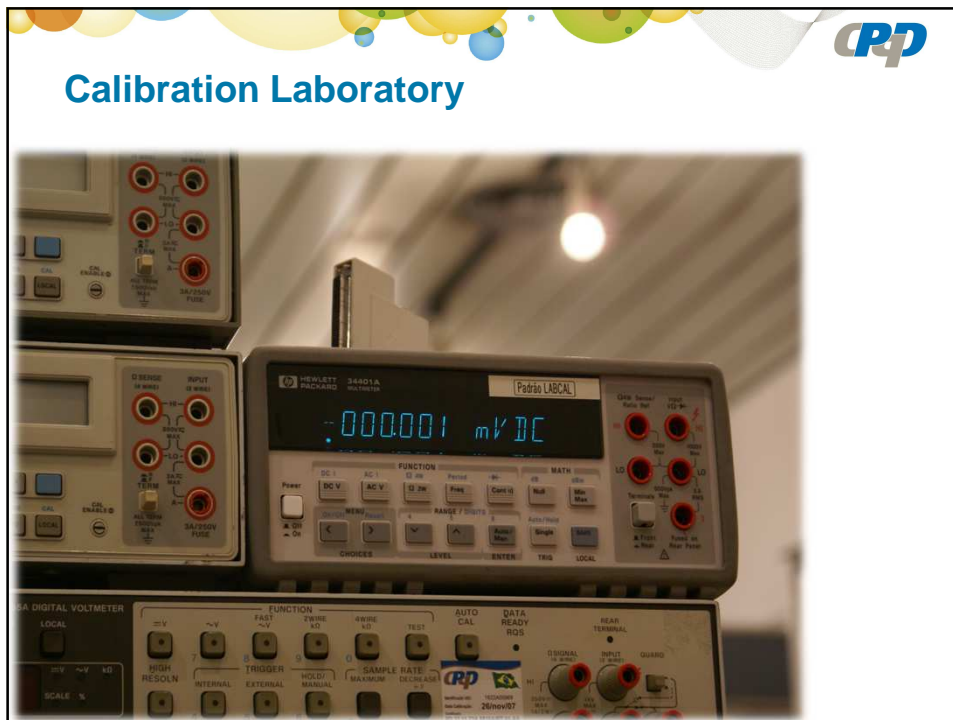












## Interoperability experience

- Main experience
  - Brazilian Operator 1
    - GSM/GPRS/EDGE and WCDMA tests
      - Four big cities in four states (SP, RJ, MG and PE)
    - CDMA/EVDO tests
      - Nine cities in six states and Federal District
      - More than 400 tested terminals, including SIM card tests
  - Brazilian Operator 2
    - GSM/GPRS/EDGE and WCDMA tests
      - Three cities in two states and Federal District
    - More than 260 tested terminals
  - Brazilian Operator 3
    - GSM/GPRS/EDGE and WCDMA tests
    - Two cities in two states and Federal District
    - More than 250 tested terminals, including SIM card tests



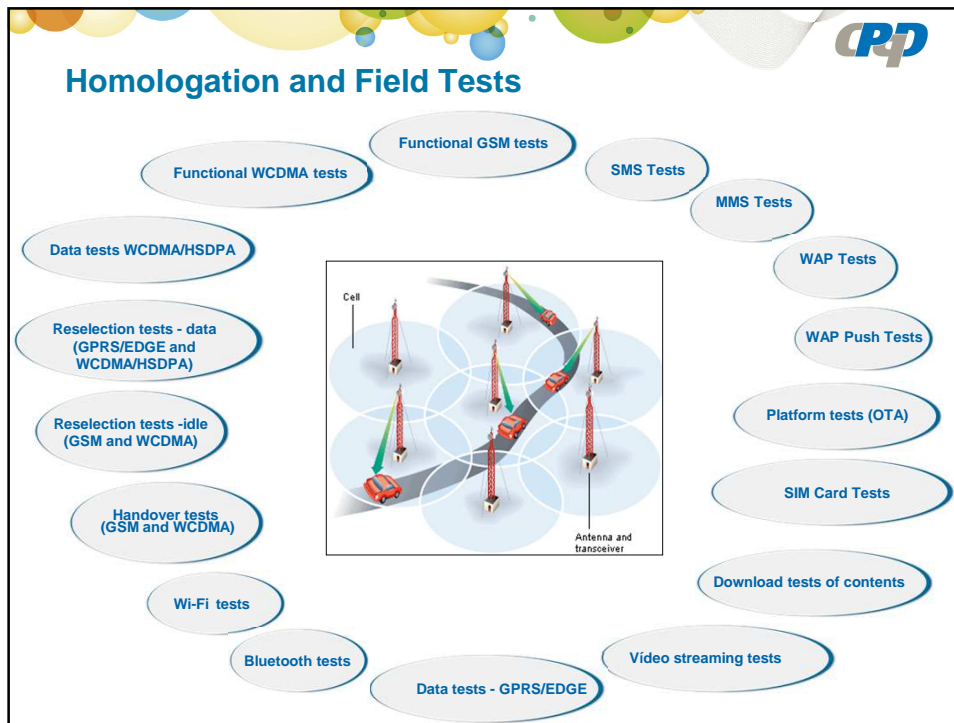
## CPqD & Brazilian Operator – Long term partnership

- Experience
  - Interoperability tests on CDMA technology (IS-95, IS-2000, and EVDO) and AMPS based on CDG – 3 standard
    - 1998 – CPqD develops CDG – 3 test procedures
    - 1999 – CPqD prepares the proposal for CDG – 3 procedures
    - Extend the evolution of procedures from technology monitoring performed by CPqD
  - Interoperability tests on GSM/GPRS/EDGE technologies based on the procedures and test reports developed by CPqD
    - Based on the international standards (3GPP)
  - Procedures adjustable to the scope required by the service provider



## Current services provided to operator

- Field tests in Rio de Janeiro and São Paulo
- Test includes default list requested items + SIM Cards + additional professional services
- For laboratory tests, we currently use operator's equipments:
  - AGILENT 8960 (LAB APPLICATION version H)
  - ANITE SAS + 4 RF setups (8960) + Combiner + 2 BSP (ANITE BASEBAND PROCESSOR)
  - Rohde&Scharwz's CMW 500
  - Shield box
  - Shield room
  - ANRITSU MD8470A



**CPD**

## Conclusion

- Conformity Assessment and Interoperability are essential for telecommunications growth in Americas region.
- Conformity Assessment and Interoperability helps countries development.
- Countries must have your conformity assessment and interoperability standards based on international bodies.
- Countries must have your own infrastructure for testing and measurement for conformity assessment and interoperability



