



Brazil 5G Spectrum Allocation and Networking: Experience Sharing

International regulatory cooperation

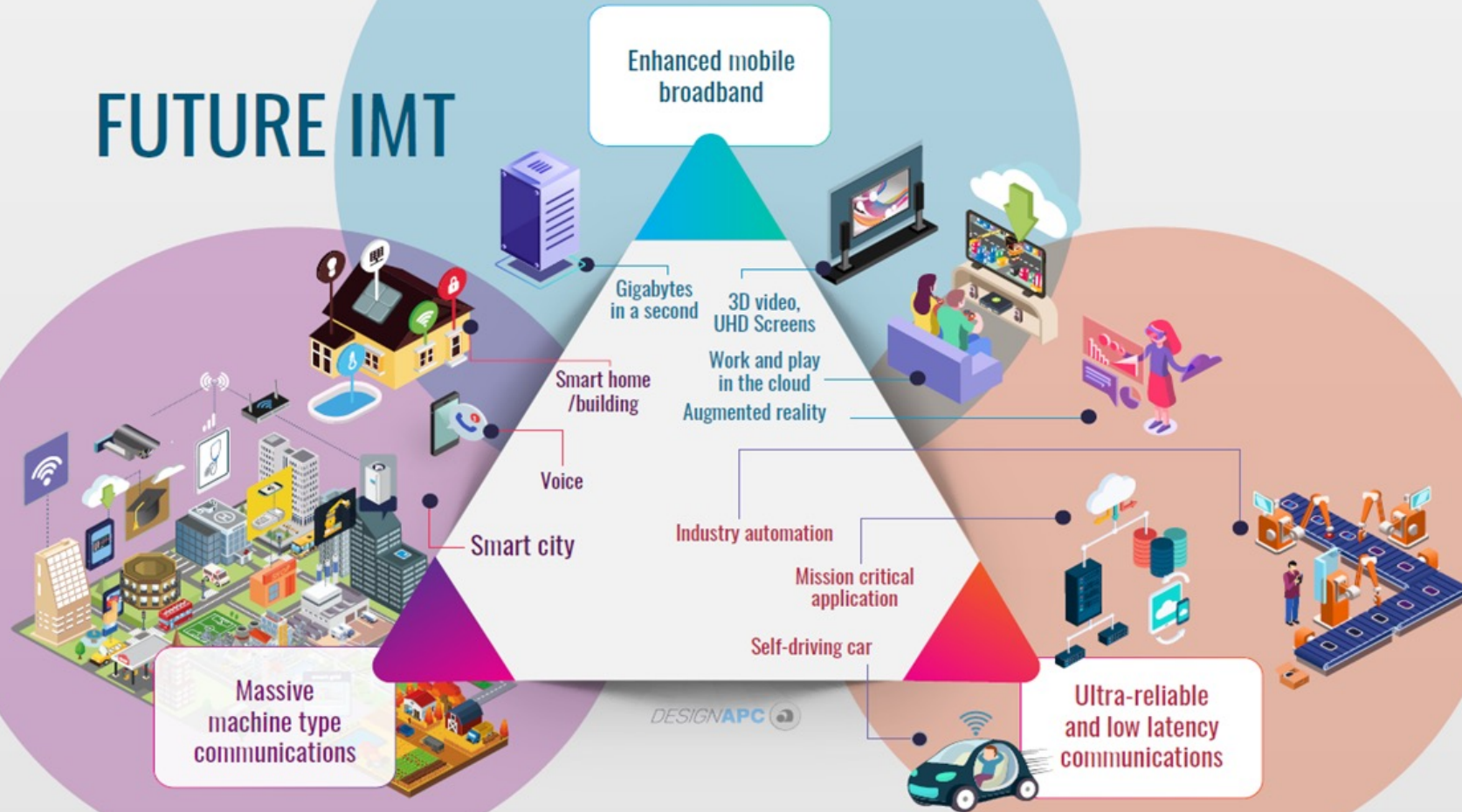
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**21st Caribbean Strategic ICT Ministerial
Seminar, San Ignacio, Belize, April 11th, 2024**

5G Panorama

FUTURE IMT



Context

Brazil:

Biggest country in South America

Territory 8.51 million km²

Population 203 million, mainly in urban areas

Remote areas (e.g. Amazon forest)

Relevant economical activities in rural areas



Anatel 2021 Spectrum Auction

Values ~ US\$10 billion

700 MHz Band
20 MHz

2.3 GHz Band
90 MHz

3.5 GHz Band
400 MHz

26 GHz Band
3,200 MHz

Investment Commitments

- **Every** municipality's main urban center with 5G:
 - **1,174 municipalities** with more than 30 thousand inhabitants with at least 3 operators
 - **4,396 municipalities** with less than 30 thousand inhabitants with at least 1 operator
- **1,700 locations** which are not the main urban center of the municipality with 5G
- **391** municipalities' main urban centers with 4G or with a superior technology
- **7,430** locations which are not the main urban center of the municipality with 4G or with a superior technology
- **35,784 km** of federal roads covered with 4G
- **530** municipality's main urban center reached by optical fiber *backhaul*
- **R\$ 3.1 billions** for school connectivity
- **Infoways Amazon Region** (optical subfluvial cables)

Specific Groups

GAISPI

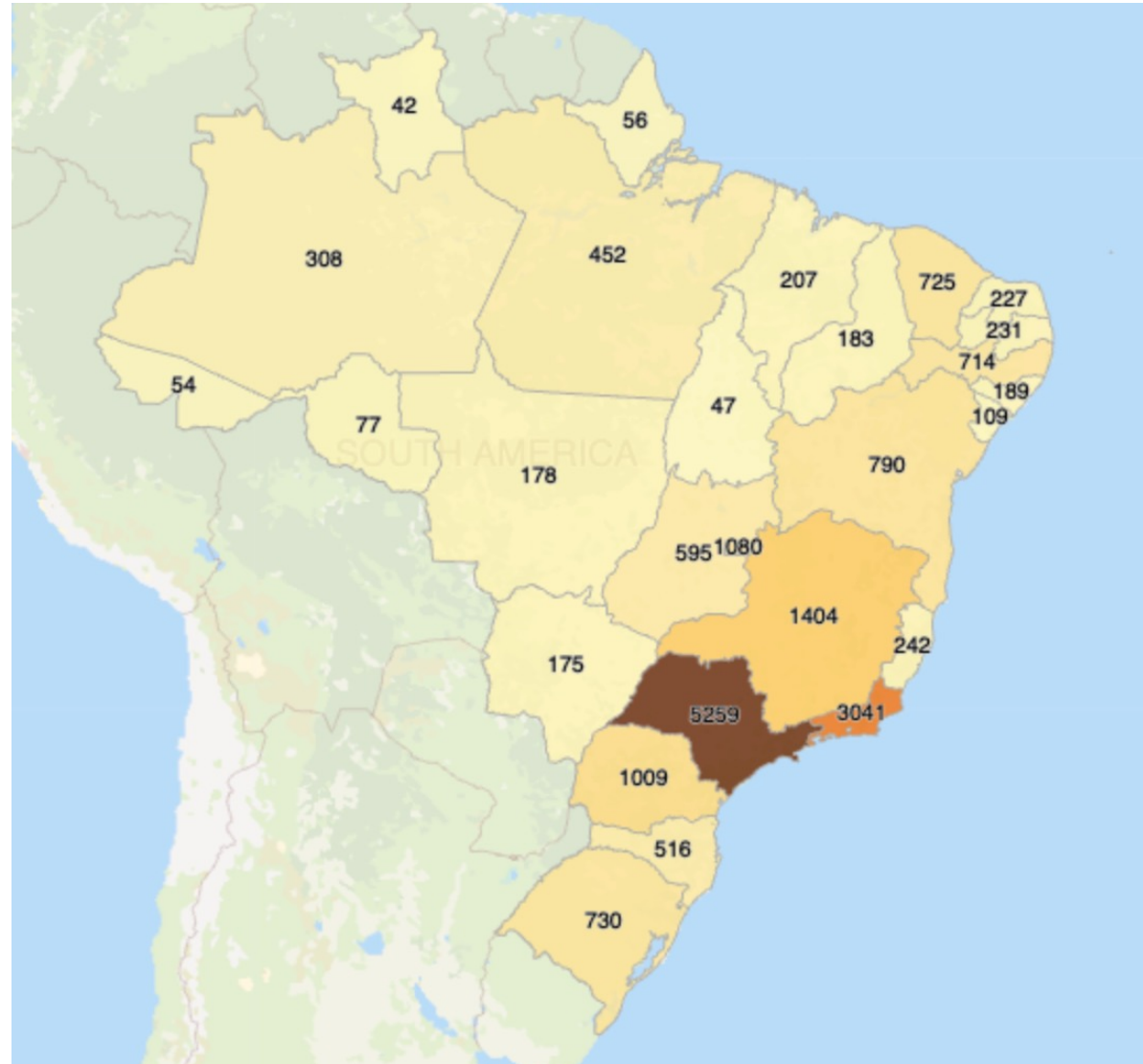
- ✓ Free access C band satellite TV migration to Ku band;
- ✓ Removal of Fixed Satellite Service (FSS) stations from the 3,625 MHz to 3,700 MHz;
- ✓ Sustainable and Integrated Amazon Program – PAIS;

GAPE

- ✓ School connectivity

5G – Current Scenario

- ✓ 799 municipalities with licensed 5G base stations in the 3.5 GHz band
- ✓ More than 20 thousand base stations licensed in the 3.5 GHz band
- ✓ More than 22 million 5G mobile terminals in service



CYBERSECURITY ASPECTS

Regulation: Obligations that seek to increase cybersecurity maturity and resilience

Equipment Certification Process: established security requirements in the certification process.

Active Regulation: Permanent Technical Group with Anatel and providers in permanent cooperation and updating risks and actions

Awareness: actions to increase cyber risk awareness and digital literacy among citizens, essential for meaningful connectivity



Challenges and lessons

Challenge

- Fulfill the remaining digital gaps and improve the population digital skills (meaningful connectivity);

Lessons

Importance of mapping the gap and having high-quality data about it

Spectrum allocation should consider addressing digital gaps (debates around new bands, including 6 GHz)

Stable regulatory environment (e.g., licenses, cybersecurity, and certification framework)

International cooperation (bilateral and multilateral)

- . Since 2022 Anatel celebrated 12 new Memoranda of Understanding (Mou) with regulators, ministries and embassies; valid MoUs and *ad hoc* cooperation is frequent (virtual and in person);
- . Presidency and revitalization of the Portuguese Speaking Countries Regulatory Association (ARCTEL-CPLP), capacity Building activities;
- . More engagement in ITU, CITELE, Mercosur.
- . Open to new partnerships.

Thank you!

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