



The 5G Journey... and the 6G Destination

## Bridging 5G and 6G in Brazil: Current Progress and Future Readiness

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# Overview of Brazil

- *5th largest country (geographical area)*
- *Population: 213 millions*
- *Largest city in Latin America– São Paulo with 12.3 millions inhabitants*
- *5,570 municipalities, +20 thousands localities*



- *Largest economy in Latin America (1.6 trillion US\$)*
- *Top 10 economy in the world*

# 5G Status in Brazil

Municípios filtrados

5.570

Liberados (ou antecipados)

5.380

Planejamento aprovado

190

População Mun. Liberados

209,7M

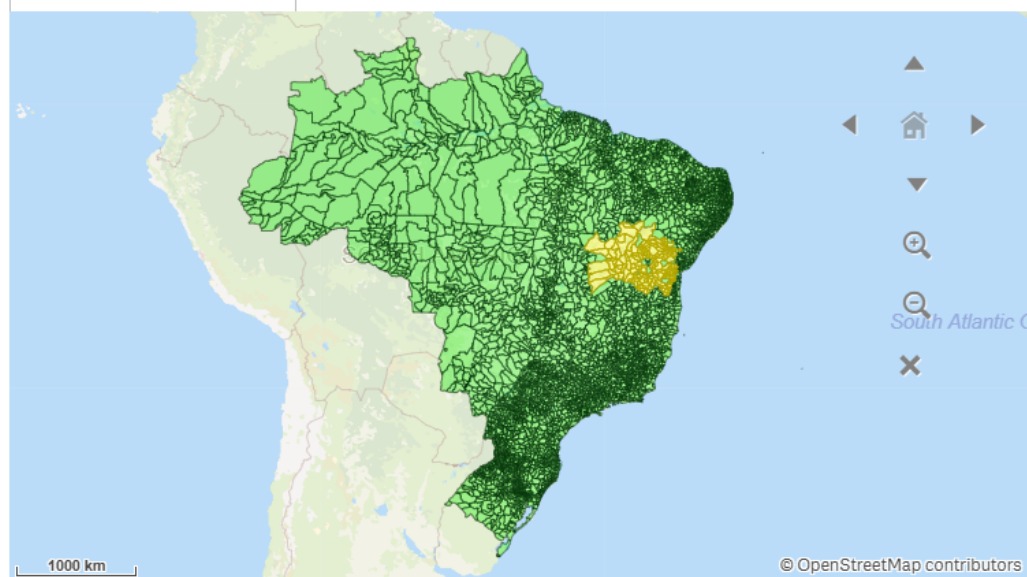
População abrangida

213,3M

Status liberação para uso da faixa 3,5 GHz pelo 5G

Municípios planejamento aprovado  
Camada de área

Municípios liberados  
Camada de área



Por status

Curva Liberações 3,5 GHz

Curva início Migração TVRO

Comparativo por fases



*Good Public Policies, Good Regulation → Good Results*

Opensignal 5G Global Awards 2024 Large land mass group – Recognized operators			
	5G Global Winner	5G Global Leader	5G Global Rising Star
			
5G Download Speed 	<u>Vivo - Brazil</u>	<u>Claro - Brazil</u> Unifi - Malaysia Digi - Malaysia Orange - France 2degrees - New Zealand <u>TIM - Brazil</u> Maxis - Malaysia One NZ - New Zealand DITO - Philippines	Orange - Poland T-Mobile - Poland Play - Poland AT&T - USA Verizon - USA

**Brazil's Vivo along with South Korea's LG U+ and SK telecom top the charts for 5G Download Speed**  
 Vivo is the sole 5G Global Winner for 5G Download Speed in the large land mass category, with our users on its network clocking up average 5G download speeds of 365.6Mbps. Behind Vivo, is another Brazilian operator, Claro – recognized as a 5G Global Leader. Over in the small land mass group, LG U+ and SK Ttelecom are joint 5G Global Winners for this metric with statistically tied scores of 434-439.5Mbps.





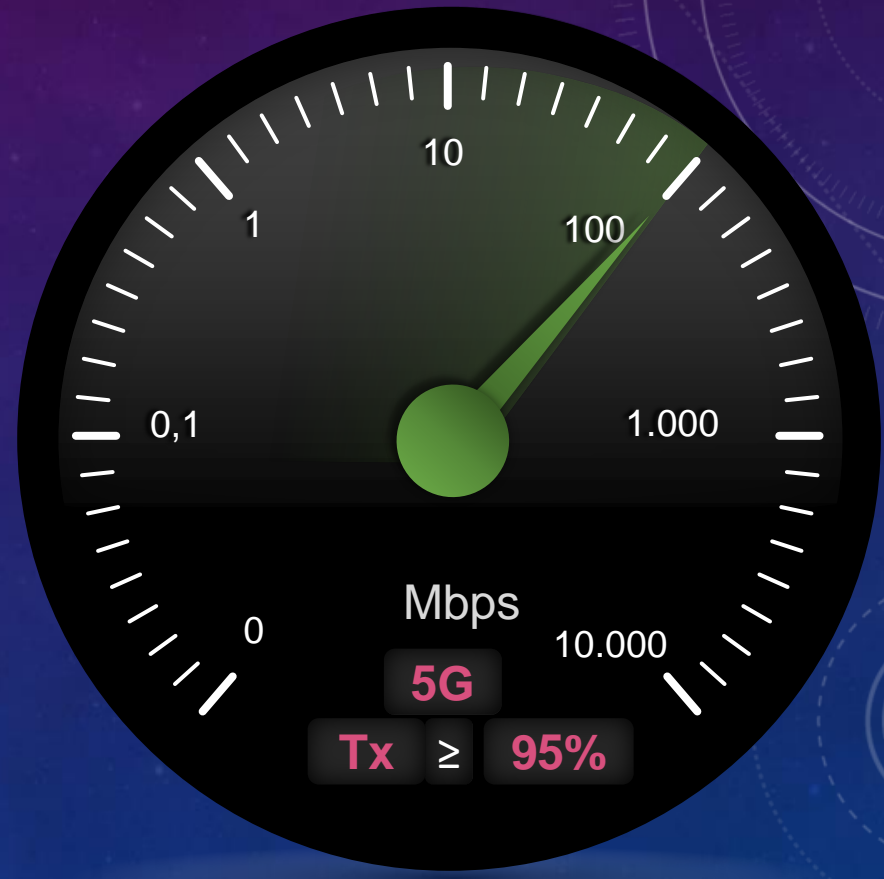
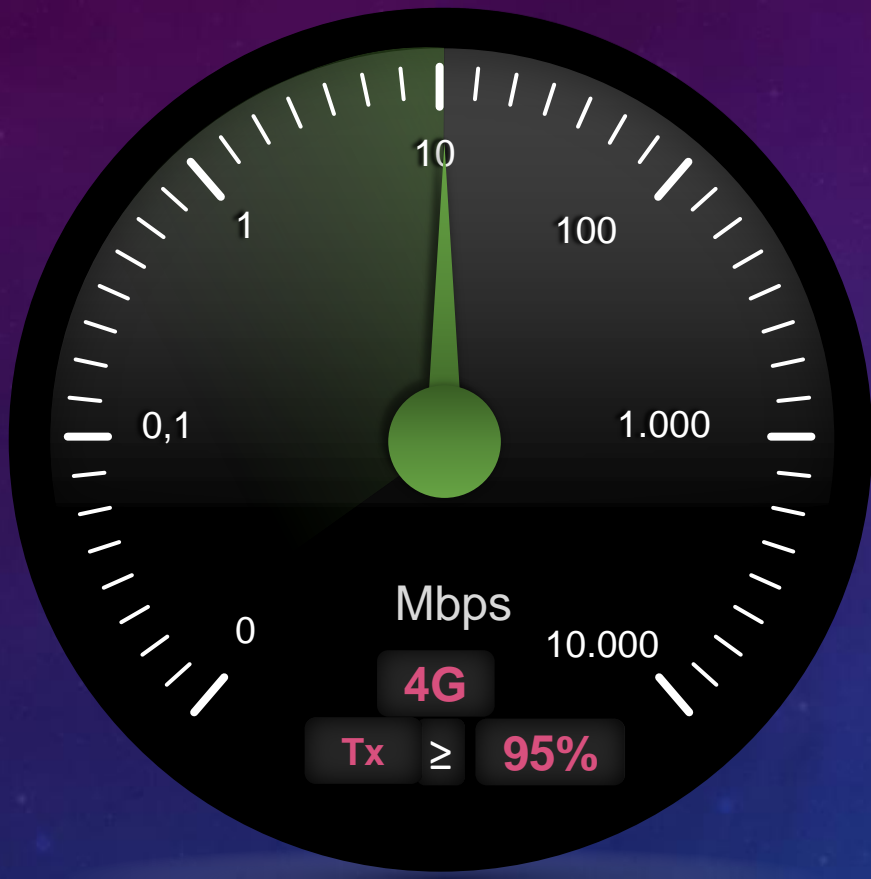


# National Program to Improve Quality and Mobile Broadband Coverage - "ConectaBR"



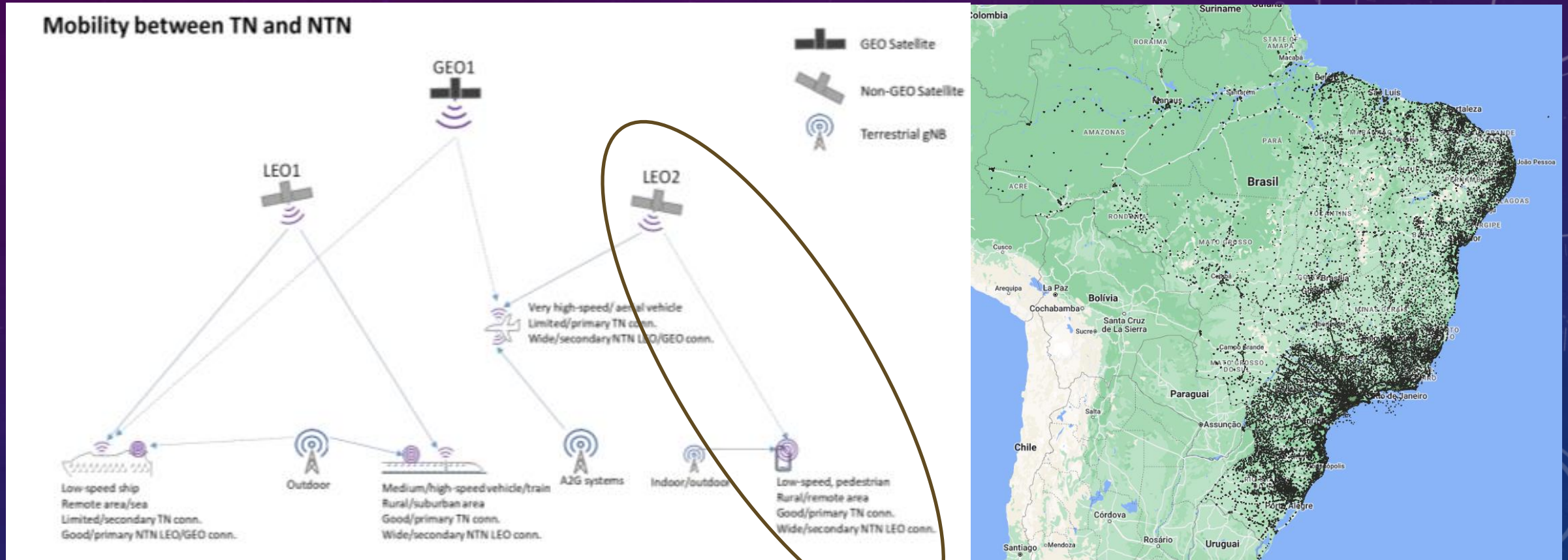
<https://oglobo.globo.com/epoca/o-impacto-do-celular-em-aldeias-indigenas-23408432>  
<https://portal6.com.br/2022/06/08/5g-impuro-falha-em-superar-4g-em-teste/>  
<https://olhardigital.com.br/2019/07/03/noticias/g-no-mundo-testes-de-velocidade-foram-feitos-em-11-cidades/>

*National Program to Improve Quality and Mobile Broadband Coverage - "ConectaBR"*





## National Program to Improve Quality and Mobile Broadband Coverage - "ConectaBR"



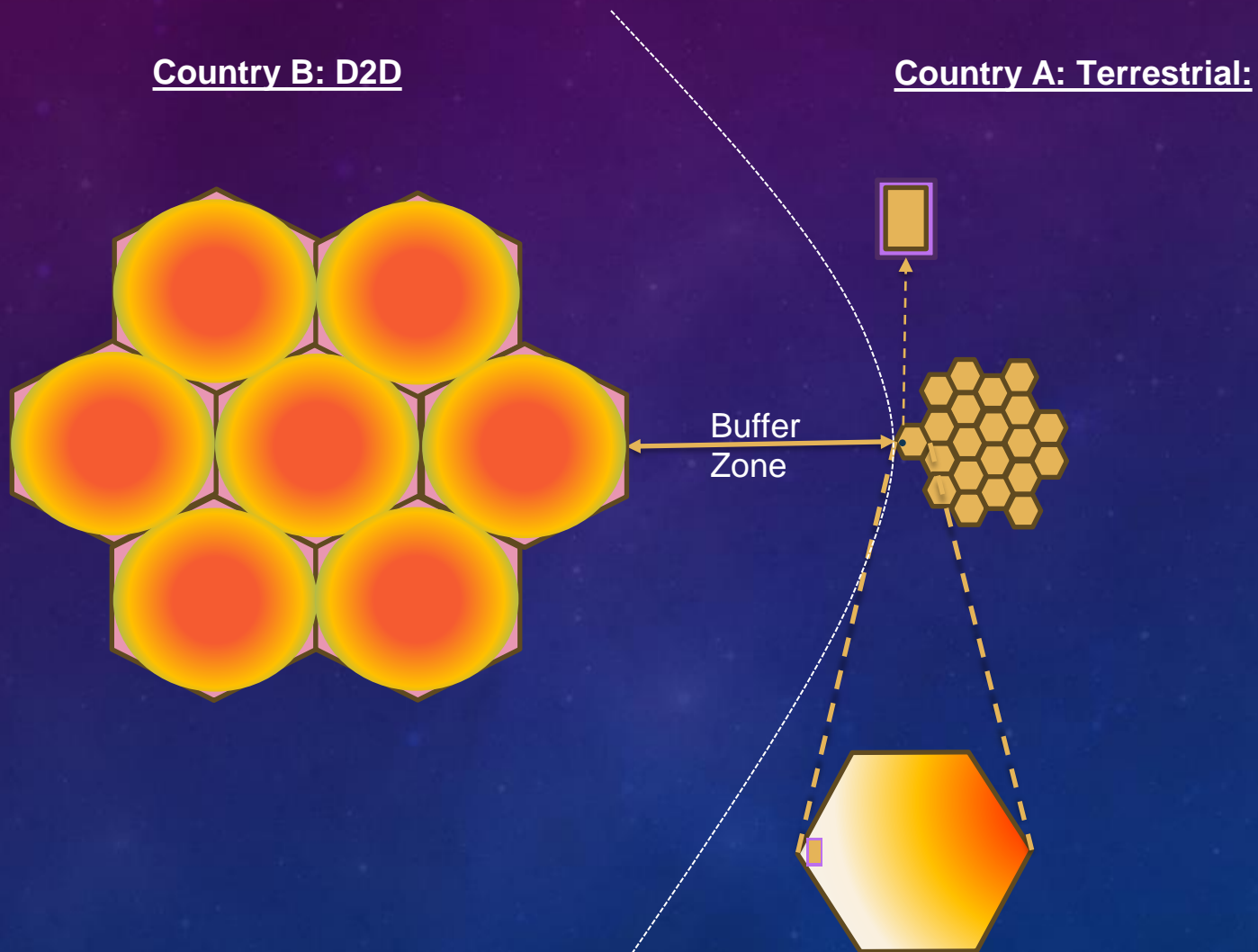
Source: 5G Americas



## *Maximizing the potential of D2D – what are the key bands and connectivity models?*

- D2D may generate in cumulative revenue more than US\$ 100B until 2032
- Evolution phases: (i) Emergency; (ii) Text message; (iii) Voice & Data
- D2D satellite operators must consider:
  - Spectrum strategy (MSS and/or IMT)
  - MNO Partner and Standardization
  - Target market
- Channel capacity
- UE-satellite distance; elevation angle; orbital planes, satellites per plane; visible satellites; handoff rate
- Domestic x International issues

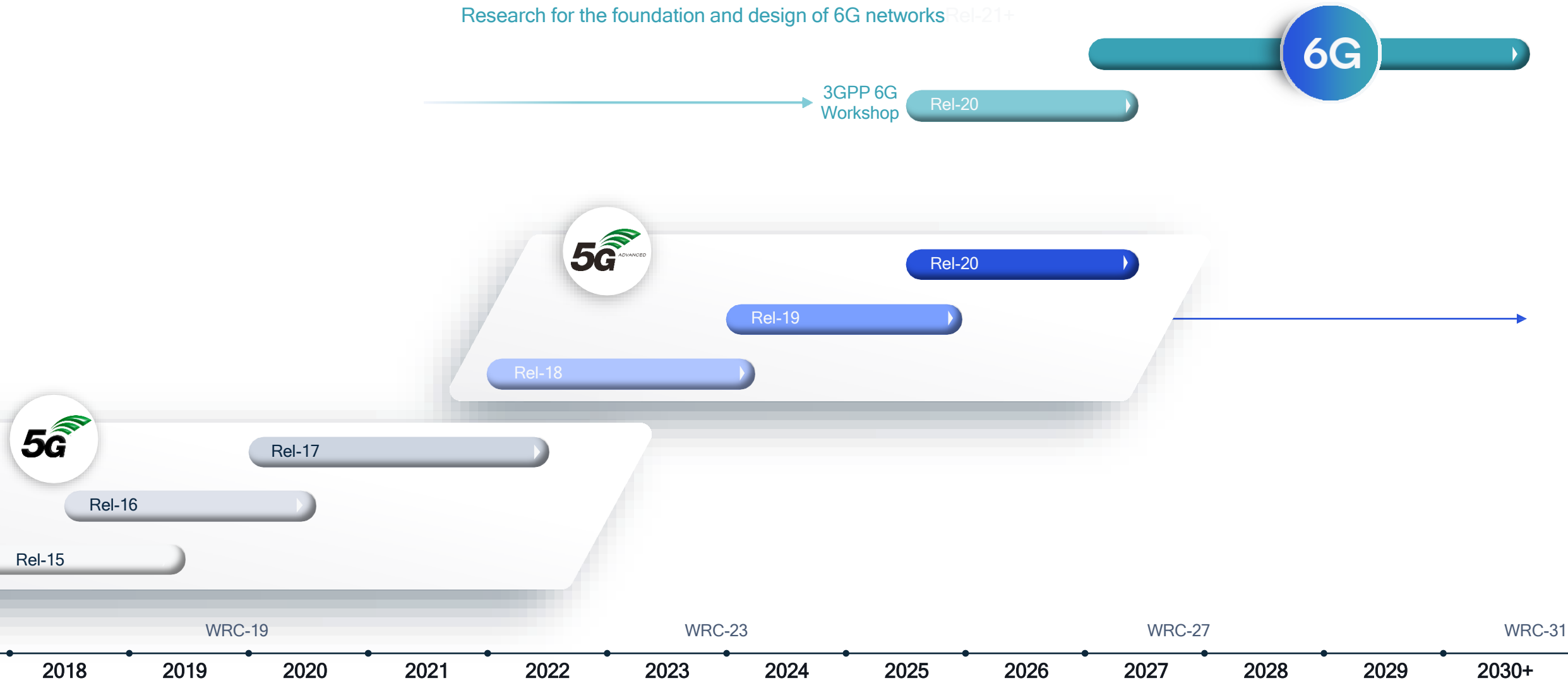
WRC-27: Agenda Item 1.13 – D2D connectivity to complement terrestrial IMT network coverage (Res. 253 (WRC-23))



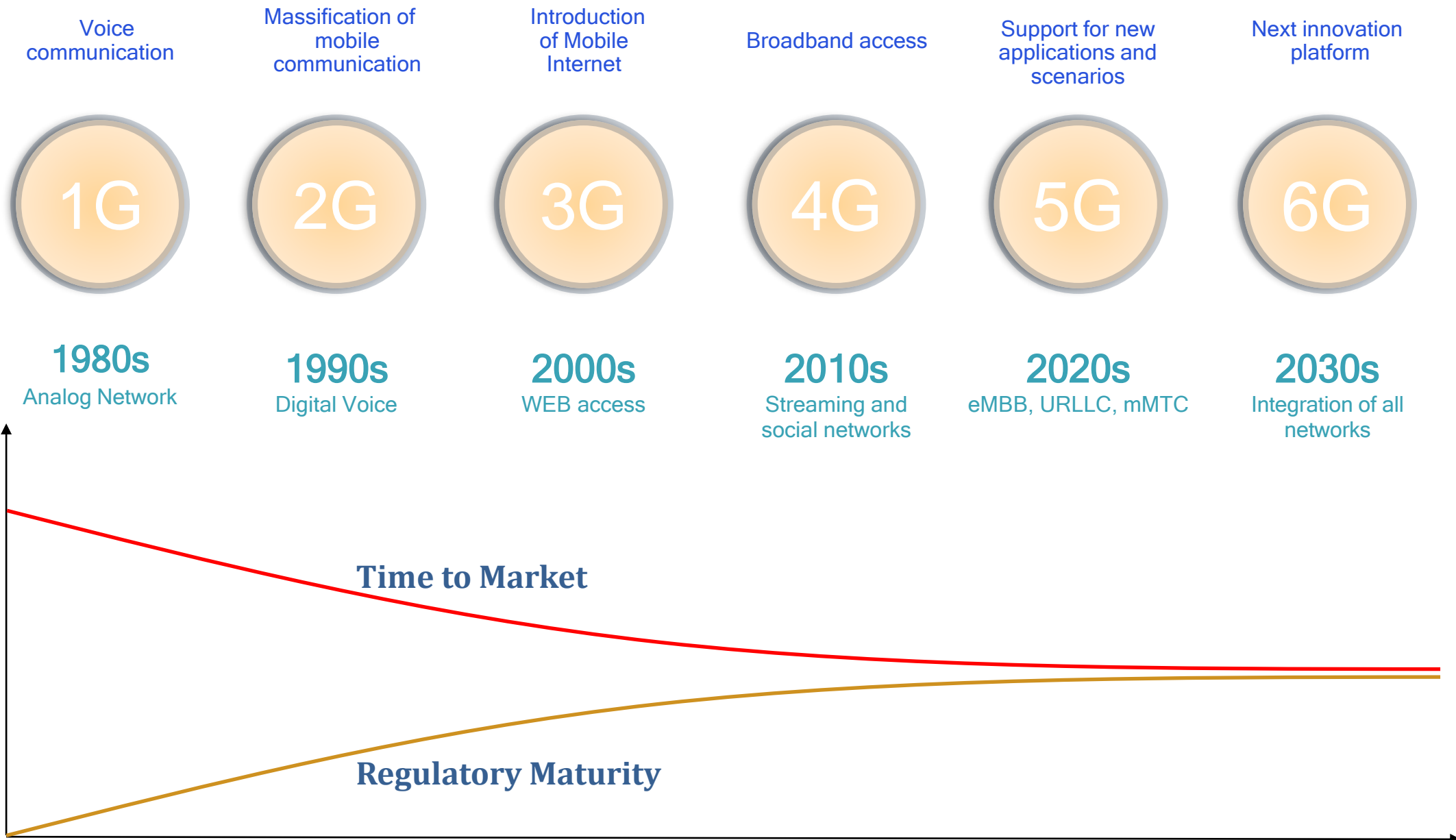


# Roadmap to 6G

Research for the foundation and design of 6G networks Rel-21+



# *Time to Market and Regulatory Maturity*





# *Brasil 6G Project - Objectives*

Long-term scientific research to meet the requirements imposed on 6G networks

Make Brazil an internationally recognized hub for generating knowledge in 6G networks

Coordinate scientific actions between Universities and ICTs, expanding the impact of research in 6G Networks

Create an experimentation environment to implement the proposed contributions under real operating conditions

## International Collaboration



EXCLUSIVES : BRAZILIAN 6G INITIATIVE SET TO BUILD TESTING PLATFORM AND NATIONAL USE CASES

## Brazilian 6G Initiative Set to Build Testing Platform and National Use Cases

By: Caio Castro | Reading Time: 6 Minutes



<https://www.6gworld.com/exclusives/brazilian-6g-initiative-set-to-build-testing-platform-and-national-use-cases/>



## *Final Comments 1*

- Brazil is investing in telecommunications infrastructure;
- Digital literacy and meaningful connectivity is still a challenge;
- One thing is what the technology can provide; other thing is to have a real business model;
- Marginal traffic demand is decreasing;
- How to monetize 6G networks? Game changing applications are needed: immersive XR, real-time holography...;
- Private networks;

## *Final Comments 2*

- Looking beyond 5G, TN & NTN integration will shape 6G;
- Integration goals: ubiquitous connectivity, enhanced reliability and resilience, higher capacity and speed;
- Some technological enablers: advanced antenna technologies, AI & ML, network slicing and virtualization;
- Spectrum for 6G: new bands x refarming;
  - 6 GHz – 15 GHz are main candidate bands
  - mmWave
  - Sub-THz



***Thank you!***  
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