



Improving Connectivity with a better Spectrum Management

Leonardo Euler de Morais

Chairman – Anatel

Chairman of Spectrum and Orbit Commission

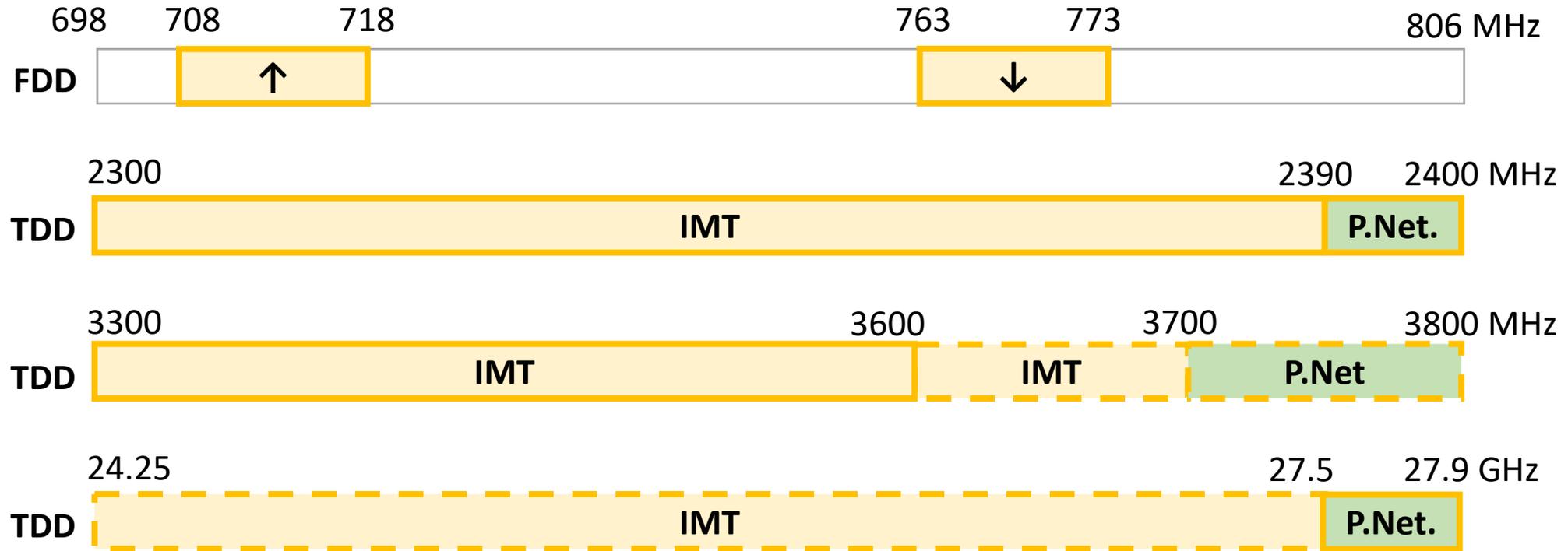
June/2021

Anatel's powers and duties

- ✓ Promote the expansion of access and usage of services, with adequate quality and prices
- ✓ Stimulate competition and sector sustainability
- ✓ Promote the dissemination of sectorial data and information
- ✓ Promote consumer satisfaction
 - ✓ Organize and regulate the operation of telecom services
 - ✓ Issuing grants
 - ✓ Monitor compliance with rules and apply sanctions
 - ✓ **Manage the spectrum of radio frequencies and satellite orbits**
 - ✓ Certify telecommunications products
 - ✓ **Represent Brazil in the International Telecommunications Forums**

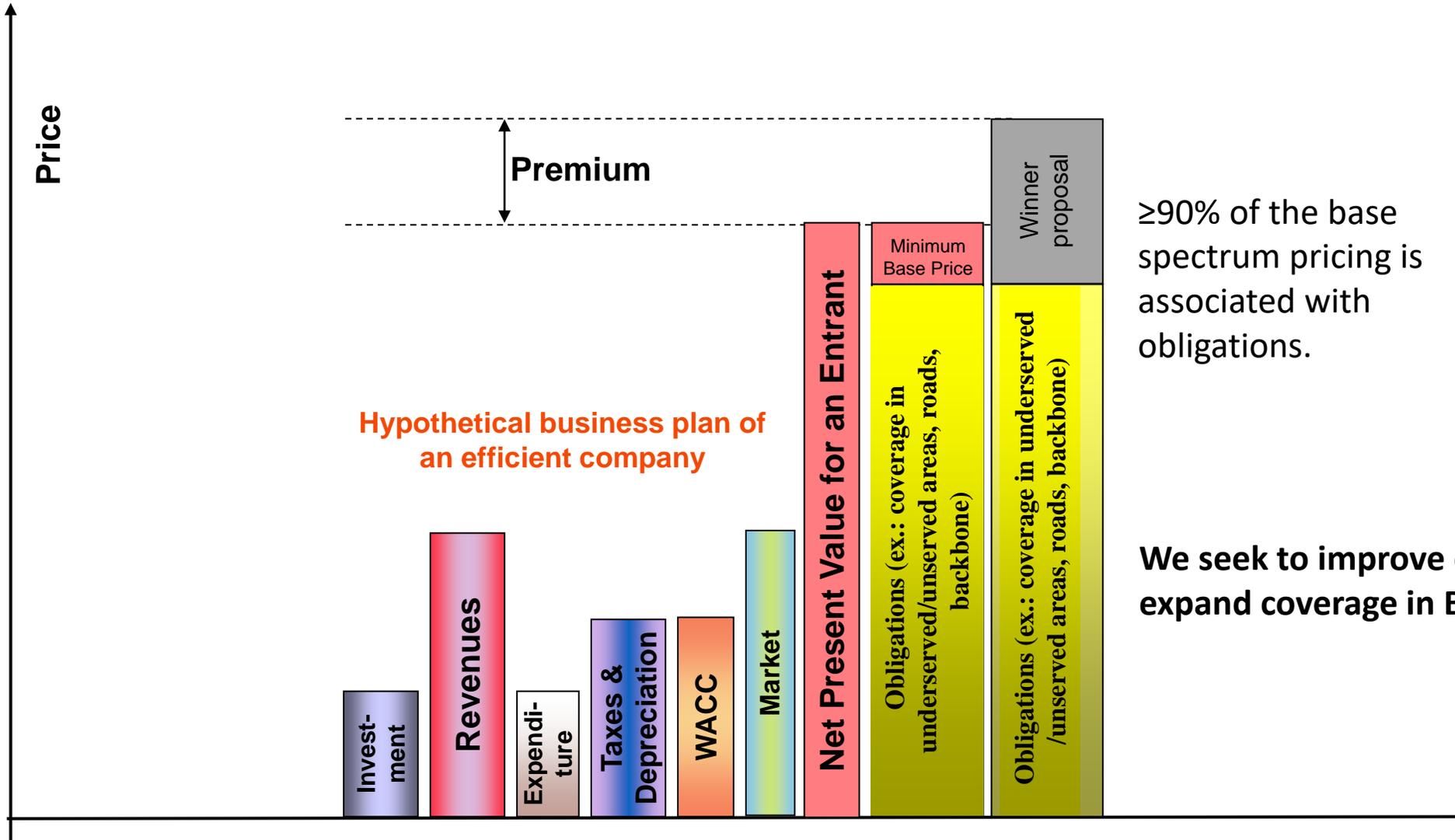
	Current situation	Challenges
Transport	<ul style="list-style-type: none"> • 82% of the municipalities, representing more than 93% of the population, is served with optical fiber; • ~ 50% of municipalities with optical fiber have 2 or more providers. 	<ul style="list-style-type: none"> • ~50% of the cities without fiber are in the North and Northeast regions;
Access	<ul style="list-style-type: none"> • 4G is the best technology available in 93% of the municipalities; • Fiber is the most used category of access; • Fixed broadband density: 50% of households; • 16 Brazilian and 36 foreign satellites. 	<ul style="list-style-type: none"> • 3G or higher in non-main districts; • 4G or higher at municipalities with less than 30,000 inhabitants; • The fixed broadband market has more than 14,000 companies granted, but 5 groups account for 2/3 of subscribers;

The purpose of the Auction is granting licenses to use radio frequencies in the following bands:



Legend:

- To be auctioned
- Not to be auctioned (Industry 4.0)
- Allocated before 2021
- Allocated in 2021



≥90% of the base spectrum pricing is associated with obligations.

We seek to improve connectivity and expand coverage in Brazil

The General Law of Telecommunications was updated and the possibility of successive spectrum renewal and spectrum trading (secondary Market) included;

The Spectrum Usage Regulation was already planned to be reviewed and updated. Now, this work is a priority in Anatel;

Additionally to the secondary Market rules details, other aspects are being improved:

Coordination Process and Spectrum Sharing:

- Facilitate active infrastructure sharing (e.g. MORAN and MOCN);
- Before put a radiocommunication station into operation, some cases may demand prior coordination;
- Secondary users in auctioned bands → USE IT OR SHARE IT PRINCIPLE
 - In case the primary user do not reply to the potential secondary user and if there is no obligation rule (e.g. coverage obligation) associate with an Auction process, then Anatel may grant a 5-year license on a secondary basis.

Expected to be approved: Public Consultation 2nd Half/2021 and regulation approval in 2nd Half/2022

WRC-03 was a milestone for WAS/RLAN

- In 2004 Brazil reflected this result in its regulation, adding 5 150 – 5 350 MHz and 5 470 – 5725 MHz for RLAN

There was a long debate between Anatel, IMT industry/operator and Wi-Fi industry

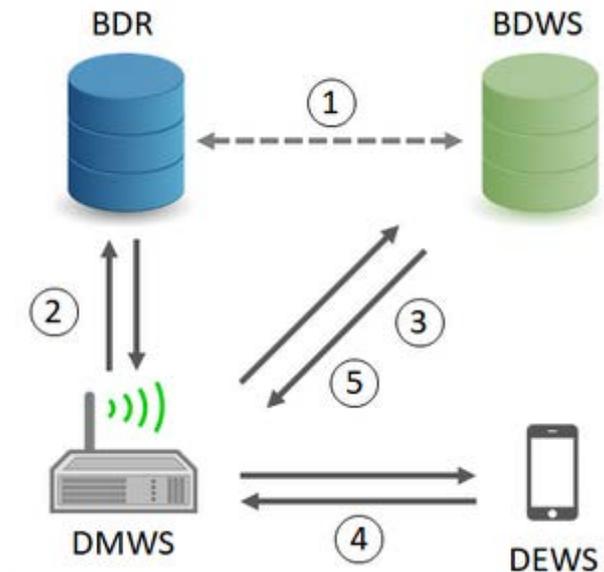
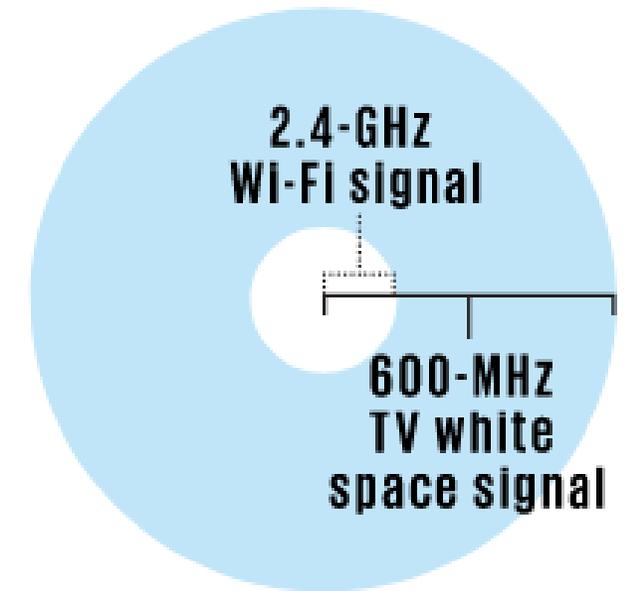
Board Decision at 25th February 2021 → Wi-Fi7 ready regulation!

- ✓ WiFi6E regulation in force together with the initial availability of the technology will maximize the economic and social benefits of using the 6 GHz band
- ✓ Very-low power and low-power indoor devices regulation.

Next steps:

- 1) Short-term: discussions on out-of-band emissions in the band 5,850 – 5,925 MHz in order to guarantee coexistence with ITS;
- 2) Medium-term: include the standard power equipment with automatic frequency coordinator.

- Ongoing process: Commissioner Emmanoel Campelo is the rapporteur for the final approval
- **About the Draft submitted to the Board:**
- Spectrum allocation: fixed service on secondary basis at 54-72 MHz, 174-216 MHz, 470-608 MHz e 614-698 MHz bands
- Licensing regime: license free under short range devices (SRD) criteria
- Use of geolocation database methods to identify the available radiofrequency blocks in a given locality.
 - Anatel responsible for the specification and enable providers to be responsible for the development and management of databases
- Technical and operational requirements will be established by means of infra-regulatory standard and should dispose, for example:
 - Power limits
 - Specific technical requirements of the geolocation database
 - Spurious, out of band emissions limit and other conditions to protect broadcasting service



- Spectrum auction rules offers regulators an opportunity to extent coverage to reach less attractive areas;
- IMT may not be economic viable in less attractive areas;
- Countries like Brazil has to consider different ways to guarantee connectivity. Therefore, a good and updated regulation is necessary;
- Since 2018, we have a new spectrum management model. High-level spectrum and orbit policies (e.g. frequency allocation and IMT frequency arrangement) are established by the Board. Technical and operational parameters (e.g. power limits and coordination proccess) are established by the high-level technical staff;
- The Spectrum and Orbit Commission was re-activated in 2017.
- Anatel is implementing successfully the "Conduct Adjustment Agreement" (similar to Deferred Prosecution Agreement) and the "To do Obligations", where the fines are replaced by investment in underserved areas.

Thank you!



www.anatel.gov.br



[@anatel.oficial](https://www.facebook.com/anatel.oficial)



[@anatel_oficial](https://twitter.com/anatel_oficial)

