



FÓRUM DO SISTEMA
BRASILEIRO DE
TV DIGITAL TERRESTRE

The Future of the Digital TV

1. The importance of free-to-air TV in Brazil

- Distribution platform with the **greatest penetration** in Brazilian households, being the only TV platform available in more than 70% of them;
- It secures to most of the Brazilian population a **free-of-charge, universal and democratic access to information and entertainment**;
- **Made by Brazilians for Brazilians**;
- Important **social cohesion, national and cultural identity factor**.

2. SBTVD Forum role

- **Decree # 4.901 / 2003:** decision to establish a Brazilian DTV System;
 - **Stimulate research and development** and enable the expansion of Brazilian Technologies and of the national industry related to information technology and communications.
- **Decree # 5.820 / 2006:** creation of the SBTVD Forum to advise the government regarding politics and technical issues related to the approval of technical innovations, specifications, development and implementation of the Brazilian DTTB system (SBTVD-T), based in the Japanese standard ISDB-T.

2. SBTVD Forum role

- Requirements established for the SBTVD-T:
 - I - digital transmission in High-Definition (**HDTV**) and in Standard-Definition (SDTV);
 - II - simultaneous digital transmission for **fixed, mobile and portable reception**; and
 - III - **interactivity**.

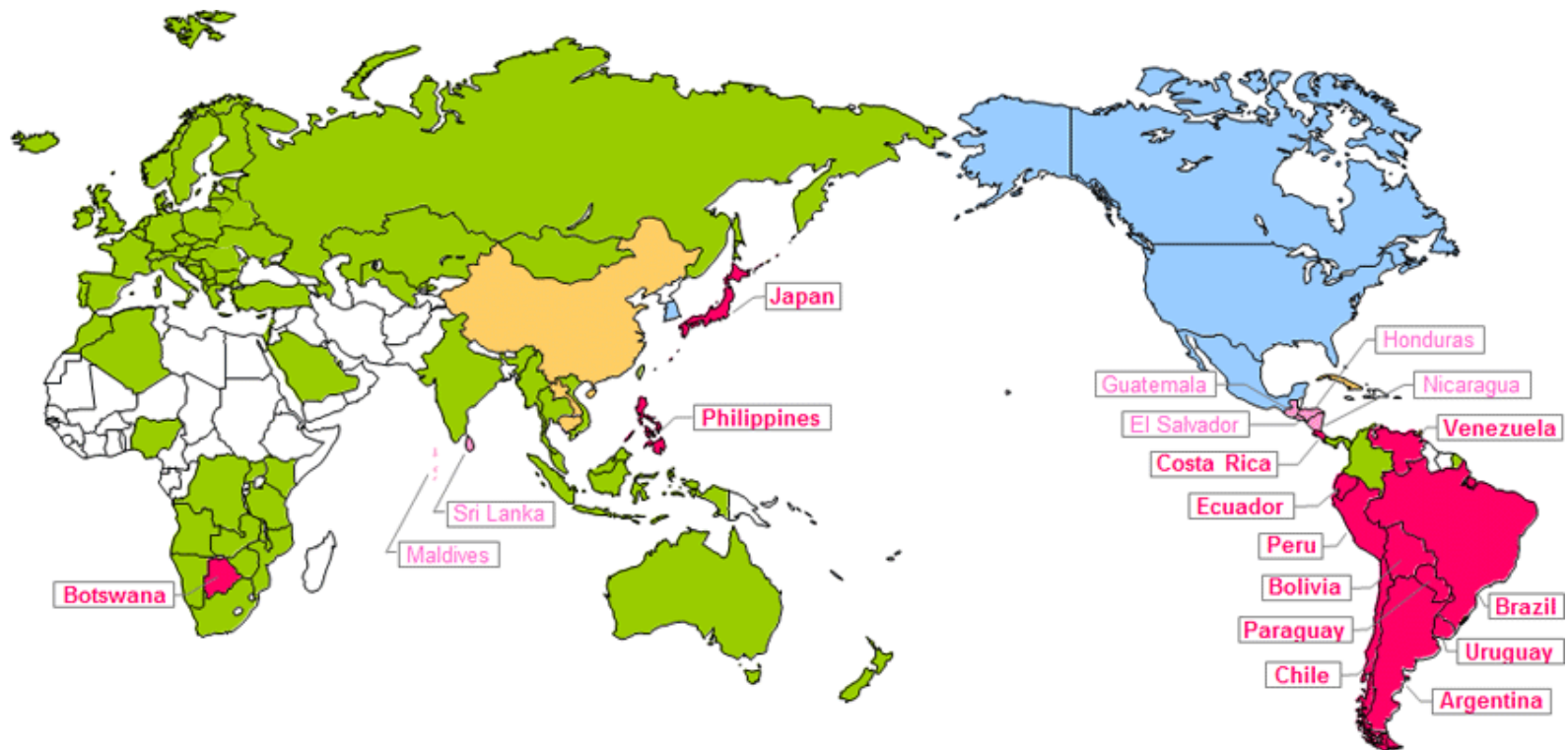


2. SBTVD Forum role

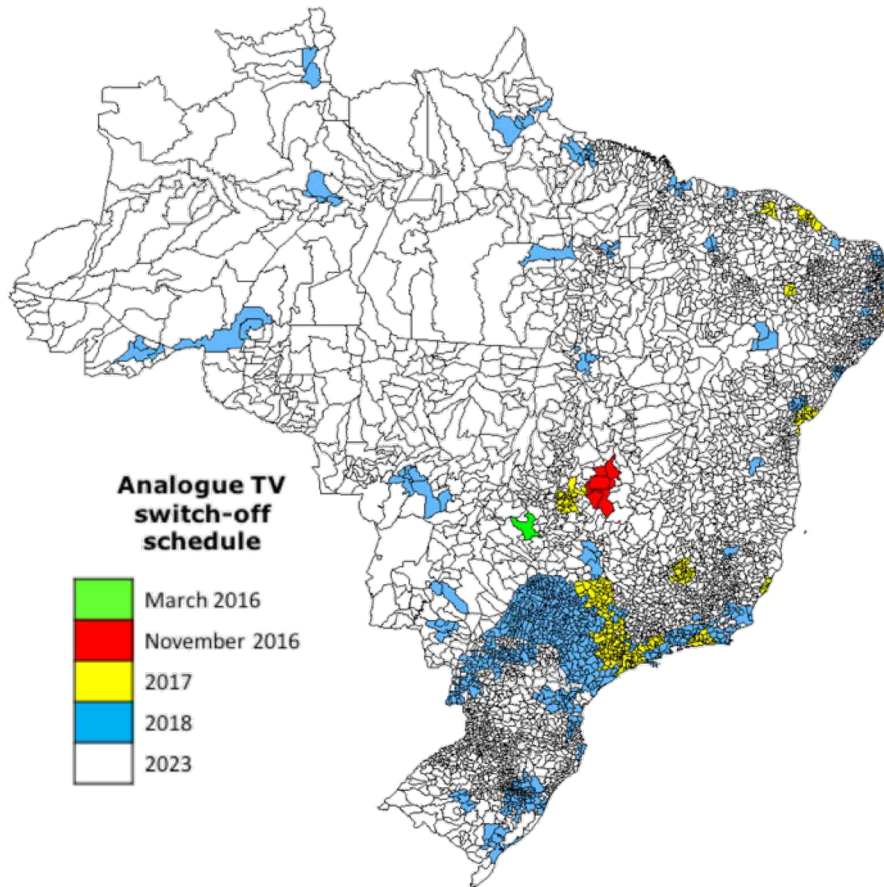
- The **SBTVD Forum**, composed by representatives of the broadcasting, academy, transmission, reception and software industry sectors, developed and published the first **SBTVD-T standards** in **2007**, allowing the official opening of transmissions in that same year.
- Since then, the standards have been **continuously revised and updated** by the Forum.

2. SBTVD Forum role

- The technological innovations proposed by Brazil were incorporated to the ISDB-T standard, which is currently adopted by 19 countries.



2. SBTVD Forum role



- Since 2016, Brazil started a **safe and gradual analog TV switch-off process**, that aims to assure that no one be deprived of the terrestrial free-to-air TV and that has been very **successful**, becoming a **world reference**.

3. Current technological landscape



- **Technological revolution:** the rhythm of development and introduction of innovations is increasingly accelerated.
- This innovations create **new consumption habits** and increase the expectations of technological services' users regarding the quality and convenience of these services.

3. Current technological landscape

- Since the introduction of SBTVD, **new immersive audio and video formats** emerged, that are already present in the new TV sets available in the market.
- The TV sets available have resolution and contrast greater than those supported in the current standard. That's the **opposite of the market situation when DTV was launched in Brazil**, when the HDTV sets offer was very low.



3. Current technological landscape

- **The availability and the speed of internet access in Brazil**, specially in metropolitan areas, increased significantly, enabling the consumption of **on-demand audiovisual content**.
- This connectivity is already in use by TV sets (**SmartTVs**) and by broadcasters' OTT offers. However, there is not yet an **integration** between the broadcasting service and the internet content offer.

The image displays three promotional banners for internet services. The first banner, on the left, has a purple background and promotes 'Banda Larga' (Broadband) with a focus on 'ultravelocidade' (ultra-speed). It lists download speeds of 25, 50, 100, 200, and 300 Mega and includes icons for Wi-Fi and a globe. The middle banner has a yellow background and promotes '500 MEGA' with a focus on 'MEGA VELOCIDADE' (Mega Speed). It lists download and upload speeds and includes a globe icon. The third banner, on the right, has a black background and promotes '1 GIGA DE VELOCIDADE' (1 Giga Speed) with a focus on 'GIGA VELOCIDADE' (Giga Speed). It includes a globe icon and the website address www.forumsbtvd.com.br.

Banda Larga

Com a ultravelocidade, sua casa pode ser tudo.

Baixe tudo o que você gosta ao mesmo tempo, com as velocidades de download de 25, 50, 100, 200 e 300 Mega.

Wi-Fi Grátis

Estabilidade para toda a sua família se conectar ao mesmo tempo

CONHEÇA A NOVA MEGA VELOCIDADE:

500 MEGA

DOWNLOAD - 500 Mbps - UPLOAD - 100 Mbps - FRANQUIA - 500 GB

1 GIGA DE VELOCIDADE

www.forumsbtvd.com.br

- www.forumsbtvd.com.br

3. Current technological landscape

- Many **DTTB standards** have also been **evolving over time**, including in this evolution not only enhancements in quality and efficiency, but also new convergent services between the broadcasting and the internet.

DVB-T2[®]

DTMB-A

ATSC 3.0

3. Current technological landscape

- Particularly in the **USA**, a market traditionally dominated by Pay-TV, the **terrestrial free-to-air TV** has been **rediscovered** by the public, gaining increasing **relevance** and **investments**.

THE
WALL STREET
JOURNAL

Millennials Unearth an Amazing Hack
to Get Free TV: **THE ANTENNA!**

Millennials watch
HBO, AMC and other
"cool" channels.

They abandoned cable TV channels
(**cord-cutters**), consuming media
exclusively via the internet.

But... the quality of the "premium" services is sometimes not satisfactory, servers don't support the traffic demand and streaming has **limitations**.

The solution? To install a \$20 UHF antenna. That's right. They now use their TV receiver to watch live events in the free-to-air channels and find it **AMAZING**.



"I was just kind of surprised that this is technology that exists. It's been awesome. It doesn't log out and it doesn't skip."

Dan Sisco - 28 years old
M.B.A. student in Utah



By Ryan Knutson
Aug. 2, 2017

WSJ

www.forumsbtvd.com.br

In Brazil, it is up to the SBTVD Forum to lead the studies for the evolution of DTV, including the definition of the technologies for the next generation.



4. SBTVD-T Evolution

- Considering the technological landscape previously described and the Brazilian role in the development and implementation of DTV in the global context and in Latin America in particular, **the SBTVD Forum considers that now it's necessary to establish a plan for the evolution of the Brazilian DTV System.**
- This evolution plan shall be based on two complementary and parallel lines of action: the **incremental evolutions** (backward compatible) and the innovations to be incorporated into the **next generation of SBTVD-T.**

The SBTVD Forum remains committed to pursue, on the one hand, the **harmonization with the main technologies available in the market** and, on the other hand, the **preservation of technologies with Brazilian intellectual property**, which it has the freedom to specify and evolve according to the specificities of the Brazilian DTTB market.



4.1. Incremental evolutions

- **The SBTVD Forum works continuously to incorporate relevant incremental evolutions to the SBTVD-T through the constant revision and update of the SBTVD-T technical standards.**



4.1. Incremental evolutions

- Development of a **new Ginga profile** that, besides enabling an audiovisual quality enhancement, will also enable the development of **new convergent services** between the broadcasting service and the internet.
- New use cases considered:
 - **Video on-demand**, supporting adaptive streaming;
 - Synchronized “**Companion Devices**”;
 - **Targeted content** (video, audio and data) synchronized with the main programming; and
 - **VoD offer integrated** with the **broadcasting** service in an unified **user experience**.

4.1. Incremental evolutions

- Support to new video formats (e.g. **HDR**);
- Support to **new immersive audio formats**.



4.1. Incremental evolutions

- The new profile shall have a satisfactory **performance** to achieve the expected quality of experience, although it **shall not have a significant impact on the cost** of hardware and software, taking advantage, as much as possible, of the existing resources of the current generation SmartTVs.
- It shall also support that the **transmission** of complementary video, audio and data to be used by the applications be done either multiplexed in the **DTTB** signal or via the **internet**.
- Finally, it shall support web technologies already consolidated in the market, such as **HTML5** and JavaScript, while preserving and evolving **Ginga-NCL**, an essential element of the Brazilian technology contained in the SBTVD-T.

4.1. Incremental evolutions

- The SBTVD Forum works currently with a plan aiming to finish the drafting of the relevant technical standards for public consultation by ABNT in **June/2018**.
- In order to achieve this evolution, it's necessary a **shared commitment of the SBTVD Forum and of all the sectors involved**.



Incremental Evolutions

- **Greater integration** of the linear TV with the **internet**.
- **Video quality enhancement**;
- Incorporation of an **immersive audio experience**.



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4.2. Next generation of SBTVD-T

- It is up to the SBTVD Forum to evaluate the technologies available and under development, in Brazil and elsewhere in the world, to be used in the next generation of DTV, considering as objectives, besides keeping and evolving all the use cases currently supported by SBTVD-T or under development for an incremental evolution, enabling additionally:
 - Greater **efficiency** in **audio, video and data coding**;
 - Greater **efficiency** in **signal transport and multiplexing**;

1995

2005

2015

4.2. Next generation of SBTVD-T

Capacity Curve in AWGN at BER=1E-6



- Greater **flexibility** and **efficiency** in **signal modulation**;
- Greater **spectrum efficiency**;

FLEXIBILIDADE

4.2. Next generation of SBTVD-T

- Simultaneous support for **HDTV portable/mobile reception** and **UHDTV (4K or 8K) fixed reception**;
- Support for **HDR, HFR** and **immersive audio**, for both fixed and portable/mobile reception;



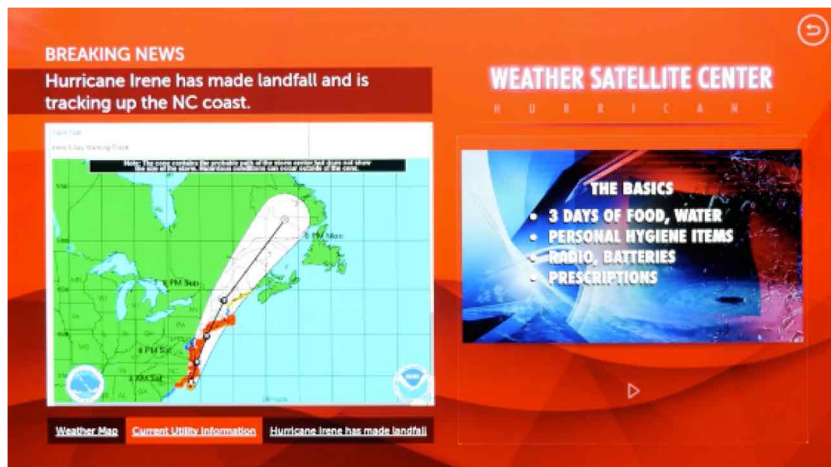
4.2. Next generation of SBTVD-T

- **Harmonization, integration and synchronization** of the **DTTB** with the **internet** environment (IP-centric);

4.2. Next generation of SBTVD-T



- Improvements in **accessibility** and **emergency warnings**;



4.2. Next generation of SBTVD-T

- Greater capacity for **backward compatible extensions and support for incremental evolutions**, both in physical and logical layers.



4.2. Next generation of SBTVD-T

- The SBTVD Forum proposes to submit the **SBTVD-T next-generation technical standards** set to the ABNT public consultation process by the **end of 2020**.



Next Generation

- Greater **audio** and **video quality**;
- Greater **efficiency** and **flexibility**;
- **IP-centric**;
- Improved **accessibility** and **emergency warnings**;
- **Extensible**.



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The SBTVD Forum can advise the government regarding national public policies related to DTTB.



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5. Public policies for the SBTVD-T evolution

- A fundamental element of these policies shall be the assurance to **keep unchanged the frequency ranges that currently have an exclusive primary allocation for the Broadcasting Television Service in Brazil, both in VHF (54-72 MHz, 76-88 MHz e 174-216 MHz) and UHF (470-608 MHz e 614-698 MHz), except for the 76-88 MHz range that will be additionally allocated for FM Sound Broadcasting in Brazil, without prejudice to the possibility of allocating additional spectrum for the next-generation SBTVD-T.**
- **These frequency ranges shall not be shared with other services** not to limit the future utilization of the available spectrum by the Broadcasting Service, even if those other services access the spectrum dynamically.

5. Public policies for the SBTVD-T evolution

- Another important element of these public policies shall be **to foster the research and development activities** of the academic institutions that are members of the SBTVD Forum for the evolution of the SBTVD-T, either for the incremental evolutions or for the next generation.



FUNDO PARA O DESENVOLVIMENTO TECNOLÓGICO DAS TELECOMUNICAÇÕES

5. Public policies for the SBTVD-T evolution

- The industrial policy is one additional element of these policies set, recognizing the importance and the cost sensitiveness of the DTV receiver for the popularization of this technology in Brazil. Therefore, the SBTVD Forum supports **tax exemptions for TV manufacturing, combined with incentive measures for the development of the SBTVD-T**, such as:
 - Reduction of the requirements regarding circuit board assembly for the TV sets with the new Ginga profile;
 - Incorporation of the new Ginga profile in 100% of the SmartTVs; and
 - Incorporation of Ginga in at least 80% of the TV sets made in Brazil.

5. Public policies for the SBTVD-T evolution

- Finally, it is necessary that the evolution of the SBTVD-T be in the **strategic agenda of MCTIC and Anatel**, to start the studies and discussions with the broadcasting sector to **improve/update DTV regulations** and to **propose the regulations applicable to the next generation of the SBTVD-T**, so that its deployment can start by **2021**.

MINISTÉRIO DA
**CIÊNCIA, TECNOLOGIA,
INOVAÇÕES E COMUNICAÇÕES**



The future of the Brazilian Digital TV starts here.



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