Comments – Integration Report

INTRODUCTION

First of all we would like to congratulate ANATEL for its competent leading in this process to change the face of television broadcasting in Brazil with the introduction of digital television and consequently making possible the modernization of a service which is very significant for the great majority of the Brazilian population.

We would like also to thank ANATEL for this opportunity to comment the report produced by CPqD concerning the laboratory and field tests carried out in Brazil with the three international digital television standards, as well as the report concerning the integrated analysis of technical and market aspects related to these standards.

Although it could be appropriate to make some comments about CPqD's laboratory and field tests report , we decided not to do it, because we consider that along this process undertaken by ANATEL for the selection of the digital television standard to be adopted in Brazil, a complete and conclusive report, with which we fully agree, had been already produced by ABERT/SET Group on the first half of last year.
However, as a general comment which is also applicable to integration report, we would like to say that in our view CPqD reports minimized the advantages ISDB-T has over the other two international standards.
Although in many cases the advantages were pointed out by CPqD, we consider that the relevance of the advantages were not weighted properly.

Our contribution to the present Public Consultation comprises a point by point comment of the items we considered relevant on the Integration Report of Technical and Market Aspects of Digital Television, and five separate attachments where we comment in more detail matters like HDTV, FLEXIBILITY, MOBILE RECEPTION, STATUS OF DIGITAL TELEVISION IN JAPAN and NEW DEVELOPMENTS IN DIGITAL TELEVISION.

The comments we present here and the attachments are intended to cover the subjects listed by ANATEL on the PUBLIC CONSULTATION 291, dated April 12th, 2001, and comprised on its items 3.1. Technical evaluation of the digital terrestrial television standards, 3.2. Current status of digital television in the world, 3.3. Technical evolution of the digital television systems and possibilities for new applications and 3.8. Suitable business model for the Brazilian conditions.

1. **Page 25 – Item 3.1**

In this item the results of three market researches performed by ANATEL and comments regarding these results are presented.
The results are presented as Expectation of the Brazilian Users Concerning the Television of the Future. However, normally, regular users have not sufficient knowledge of new technologies to permit them to distinguish what applications and services can be delivered by these new technologies. They need to be oriented on all the possibilities of the new technology. In the case of the market researches performed by ANATEL, users were presented to a list of attributes of the Television of the Future, but if we look at this list we can conclude that users were not faced to some features or attributes such as mobility and portability, considered today as among the most representatives features of the Television of the Future.
That makes the results of the market researches of limited usefulness to the evaluation of what services a digital television standard should be expected to provide, from the user's point of view.

Detailed information regarding mobility and portability can be obtained on **ATTACHMENT 3 – MOBILE RECEPTION.**

2. **Page 27 – Item 3.1.1**

In this item HDTV concept is associated in a limited way with only better image and better sound.
If in the market researches HDTV was introduced to the users with such limited definition, probably the results will lead to an under evaluation of HDTV in the preference of the users.
The knowledge by the users of some attributes of HDTV like the sense of immediacy experienced only in theaters, the experience of "being there", the possibility of closer viewing and the sense of personal involvement allowed by a wider viewing angle (30 degrees), would certainly give HDTV a better grade in the users' evaluation.

Detailed information regarding HDTV can be obtained on **ATTACHMENT 2 – HDTV.**

3. **Page 37 – Figure 4.4**

On the upper right side of Fig. 4.4, the term “Broadcast” should be replaced by “Terrestrial”.

4. **Page 39 – Figure 4.6**

On the upper right side of Fig. 4.6, the term “Broadcast” should be replaced by “Terrestrial”.

5. **Page 44 – Item 4.4**

The information *that “ISDB-T standard (Integrated Services Digital Broadcasting) was created in Japan by the consortium DiBEG (Digital Broadcasting Experts Group)”* , is not correct.
ISDB-T was created by ARIB (Association of Radio Industries and Businesses) after some initial studies carried out by NHK (Nippon Broadcasting Corporation). Moreover DiBEG is not a consortium. DiBEG is a group created in 1997, currently composed by 35 associates comprising broadcasters and manufacturers, whose purpose is to promote ISDB all over the world.

6. **Page 45 – Figure 4.9**

On the upper right side of Fig. 4.9, the term “Broadcast” should be replaced by “Terrestrial”.

In the blue color rectangle on the right side of the figure it is missing one of the versions of ISDB, the Cable version.

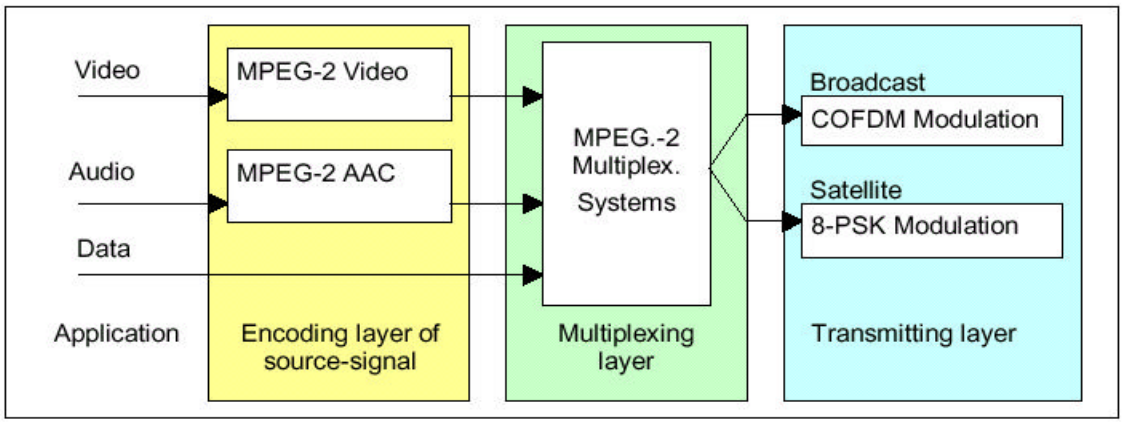
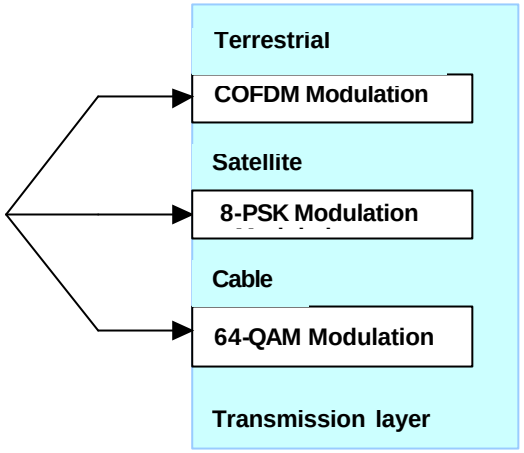


Fig. 4.9. ISDB System

The blue rectangle should be as shown below.



7. Page 46 – 1st paragraph

Describing ISDB-T technical characteristics it is explained that *"ISDB uses additionally a second scrambling, the temporal transposition – that is to say, groups of bits have their temporal positions exchanged according to a specific sequence"*. This sentence addresses to a note (21) on the footer, which says: *"The temporal transposition would be possible in DVB, but it is not used because it was considered unnecessary".*

This is not a correct evaluation of the virtues of time interleaving. It seems that CPqD agrees with DVB's view of the matter. The fact that DVB-T don't use time interleaving is one of the reasons why DVB-T is so unable to face impulse noise. Time interleaving is not only necessary but is fundamental for mobile reception.

It is also said about time interleaving that *"Apparently, it may improve the receiving under certain adverse conditions (portable and mobile receiving) and by this reason it is used in DAB – Digital Audio Broadcasting, which is also based on the COFDM".*

Again the first part of the previous sentence is a wrong assumption. Time interleaving really improves reception under adverse conditions, not apparently. The recognition that time interleaving is essential to mobile reception is evidenced by the adoption by the Europeans of this technique in DAB – Digital Audio Broadcasting, which is essentially used for mobile applications.

By the time DVB-T was specified, mobile reception was not a requirement for digital television systems. Consequently DVB-T was not equipped with the necessary tools to face the challenge of mobile reception.

The absence of time interleaving in DVB-T makes ISDB-T the only digital television system capable of providing mobile reception with sufficient robustness.

Detailed information regarding time interleaving can be obtained on **ATTACHMENT 3 – MOBILE RECEPTION.**

8. **Page 47 – Item 4.4.2**

In this item, when describing the narrowband receiver possibilities in ISDB-T, it's said that "*This facility is foreseen for instance so that the radio receivers (digital) may reproduce the audio of the television channels".*
Actually ISDB-T is the only digital television system which permits "partial reception". As the 6MHz band is segmented into 13 segments, it is possible to separate one transmission segment, which allows narrowband receivers of reduced cost and complexity. For instance, for the foreseen applications it is not necessary a MPEG-2 decoder. A MPEG-4 decoder could be used.
Narrowband receivers will be used mainly for video and data applications. The example showed in CPqD Report is of less importance among the various possibilities

More information regarding narrowband receiver possibilities can be obtained on **ATTACHMENT 2 – FLEXIBILITY.**

9. **Page 48 – Item 4.4.3**

In this item it is shown that in ISDB-T the signals can be grouped in three different levels of robustness. However the consequences of this feature and the superiority in terms of flexibility this feature gives ISDB-T in comparison to DVB-T is not explained. For example, this characteristic makes ISDB-T the only digital television system capable of broadcasting simultaneously HDTV and mobile.

In **APPENDIX 2 – FLEXIBILITY,** additional information regarding flexibility of ISDB-T can be found.

Still in this item, on the last sentence, there is a reference to section A.9 in Appendix A.
The correct reference is A.8.

10. **Page 64 – Item 5.5**

The way business models are presented in this item can lead to the conclusion that CPqD's suggestion is for the adoption of a determined and same business model for all broadcasters.
However what seems to be the best solution for a competitive environment like the one we have in Brazil on the broadcasting area is to give broadcasters the possibility to adopt its own business model according to its needs and targets. Of course some basic rules should be established to be compulsorily observed from the beginning. For example, HDTV capability should be part of the set of features of the selected standard and the receivers should be capable of receiving HDTV

programs. Otherwise consumers could have a blank screen in the presence of HDTV transmission.
So what seems to be important is to select the standard most adequate both for broadcasters and consumers.
Broadcasters should be given the possibility to make use of a digital television standard with enough flexibility to cope with all their needs. The flexibility of the selected system should also permit the businesses models to be dynamic, that is, the adoption of a certain business model in a determined time should not mean that this business model should be kept unchanged. For example, HDTV will probably be the driving force for the introduction of digital TV. But HDTV means high initial investments. For some broadcasters it will be unaffordable in the beginning and they can decide to introduce HDTV on a later step. For other broadcasters HDTV can be considered essential from the beginning. Therefore, what's important is to have a standard with HDTV capability as an available feature since the introduction of digital television.
Same concept applies to mobility or portability. Broadcasters must be free to use on the proper time the features they consider more adequate to their needs in order to better reach their target public . What's necessary is that the features are available on the selected standard.
If the freedom to define their businesses models combining the different kind of services in a flexible way is very convenient from the broadcasters' point of view, it's even more convenient from the consumers' point of view, because this will result in more possibilities for the consumers to access television broadcasting.

11. Page 72 – Table 5.6

Table 5.6 should be replaced by the table below.

Table5.6. Resolution levels of video to be adopted by Japan				
Lines	Pixels/line	Aspect Ratio	Frame Rate	Scan
1080	1920	16:9	30	i
	1440	16:9	30	i
720	1280	16:9	60	p
480	720	16:9	30	p
	720	16:9	30	i
	544	16:9	30	i
	480	4:3	30	i

*MPEG-4 can also be used

12. Page 72 – Second paragraph

The information presented refers to power systems, not to television frequencies.

13. Page 157 – Item 11.14, 4th paragraph

CPqD Report says that “according to market research there is a small preference on the part of people so that there is availability of mobile receiving.”
Of course this is an expected result. Regular people do not have any information about the possibilities of mobile reception on digital TV. The only experience people have today is the very poor quality of mobile reception on analog TV.
So the results of the market research are not valid to draw the conclusion that there is a small preference for mobile reception.
Like it was experienced for other services, the preference for HDTV could only be measured after the public had the chance to watch a live demonstration.

Comments – Appendixes

1. Page 41 – Field tests with mobile receiving

The conclusion presented by CPqD Report in this item seems to consider ISDB-T and DVB-T in the same level on what concerns mobile reception.

An explanation of the significant differences between ISDB-T and DVB-T is presented on **ATTACHMENT 3 – MOBILE RECEPTION**, where it is clearly shown the superiority of the Japanese standard.

2. Page 56 – Figures A.8.4 and A.8.5

Figures A.8.4 and A.8.5 show both ISDB-T and DVB-T with two robustness layers, what is not correct.
Although the text explains that in hierarchical transmission ISDB-T can *"transport, with distinct robustness, up to three information sequences",* the figures do not show this.

ATTACHMENT 3 – FLEXIBILITY shows the difference in flexibility for program composition between ISDB-T and DVB-T.

3. Page 66

The list of documents presented in this item should be replaced by the following table:

No.	TITLE	DOCUMENT No.
1	TERRESTRIAL INTEGRATED SERVICES DIGITAL BROADCASTING (ISDB-T) SPECIFICATION OF CHANNEL CODING, FRAMING STRUCTURE AND MODULATION(ISDB-T)	
2	NARROW BAND ISDB-T FOR DIGITAL SOUND BROADCASTING SPECIFICATION OF CHANNEL CODING, FRAMING STRUCTURE AND MODULATION (ISDB-T)	
3	TECHNICAL TERM AND ABBREVIATION	
4	PROTECTION RATIO EXPERIMENTS AND RESULTS FOR ISDB-T	

5	PROPOSED DRAFT NEW RECOMMENDATION CHANNEL CODING, FRAME STRUCTURE AND MODULATION SCHEME FOR TERRESTRIAL INTEGRATED SERVICES DIGITAL BROADCASTING(ISDB-T)	ITU Document 11A/Jxx-E 30 Mar. 1999
6	TRANSMISSION PERFORMANCE OF ISDB-T	ITU Document 11A/Jyy-E 14 Mar. 1999
7	DRAFT REVISION OF RECOMMENDATION ITU-R BT.1306 ERROR CORRECTION, DATA FRAMING, MODULATION AND EMISSION METHODS FOR DIGITAL TERRESTRIAL TELEVISION BROADCASTING	ITU Document 11/193-E 9 Feb. 2000

4. <u>Page 78</u>

In this item no information regarding the Japanese market for digital television receivers is presented, although the ISDB-S receivers for Broadcasting Satellite are much more similar compared to the ISDB-T receivers than the DVB-T receivers 8MHz without HDTV capability used currently in Europe .compared to the DVB-T receivers which could eventually be used in Brazil.

Figures on the size and diversity of the Japanese market are presented in **ATTACHMENT 4 – STATUS OF DIGITAL TELEVISION IN JAPAN.**