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Development of Digital TV in Europe

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1 Digital TV market overview

1.1.1 The new regulatory framework

Since 1997, the regulatory framework for media and telecoms in Portugal has been completely renewed taking into account the advent of interactive services, digital television and the Internet. A new Basic Telecommunications' Law (Law NR. 91/97) since August 1st, 1997, provides the legal basis for the establishment, management and exploitation of telecommunication networks, and the provision of telecommunication services.

The Government also approved on 18th September 1997 the Decree-Law Nr. 241/97, regulating the activity of cable operator distribution network for public use. This Decree-Law also partially transposed Commisson Directives 95/47/EC and Directives 89/552/EEC. It allows cable operators to rent their infrastructures, to produce their own programs and to step into interactive services, Pay-per View, Internet, etc. Therefore, since 1997 cable and satellite operators can launch their own channels (previously the operators could only provide distribution of the programmes, without any intervention on content).

A new Television Law (Law NR. 31 – A/98) approved on July 18th 1998 regulates the TV market and has been considered as a national measure of transposition of Commission Directive 95/51/EC, amending Directive 90/388/EEC with regard to the abolition of the restrictions on the use of cable television networks for the provision of already liberalised telecommunications' services. Law Nr. 17O/VII, approved in the National Parliament on the 18th of June 1998, for the first time provided the legal basis for encrypted services by allowing Conditional Access systems (article 7).

1.2 Roll-out of digital services

1.2.1 Satellite digital services

Satellite digital Pay-TV services were launched in Portugal in mid September 1998. This service is supplied by TV Cabo Portugal, the Pay-TV operator majority owned by Portugal Telecom, through Vìa Digital, Spanish Telefònica satellite platformm, broadcast from Hispasat. TV Cabo currently offers analogue Pay-TV services on cable and digital ones on satellite.

The company offers digital satellite services to clients living in areas which, for technical or economic reasons, are not covered by the Cable-TV networks. The decision to use DTH was taken for political as well as commercial reasons. Because of the transition of major sports coverage (particularly football) from Free-to-Air to Pay-TV, the need to grant equal access rights to citizens living in non-cabled areas became a major concern. Therefore TV Cabo, which had bought tv football rights, resorted to digital satellite TV to achieve immediate and complete national coverage.

Portugal Telecom and Telefònica of Spain have strategic links, which led to the choice of the Spanish platform for satellite transmissions. However TV Cabo's agreement with Vìa Digital is strictly commercial.

The bouquet distributed by TV Cabo via satellite includes 15 channels (most of them already available in the cable offer), plus options for an "Extra" 5 channels and two other channels, Playboy and Sport TV.

In comparison with cable, the number of DTH subscribers is still very small: 29,000 at the end of 1998. However the pay-TV DTH market growth is high, over 10% per month, so that, at the end of April 1999, the number of DTH subscribers had already increased to 42 000. Perspectives should be good, since households equipped with satellite dishes are estimated at about 300,000. The following table summarises the Pay-TV market situation.

Table 1 : Pay-TV market

In millions		*31st. December 1998*	*30 th. April 1999*
	Home passed	*Subscribers*	*Subscribers*
Cable TV (analogue)	1,827	0,596	0,605
DTH (digital)	0,300	0,029	0,042

1.2.2 Cable services

At the end of June 1999, **no digital TV or any other digital services** were yet supplied by cable in Portugal. The analogue cable TV market instead was quite competitive.

- ✓ The TV cable network consists of optical and co-axial cables. The optical cables, used by the Cable TV Operators for their primary networks, belong mainly to Portugal Telecom (the only organisation allowed by law to rent networks) . The Portuguese Law determines that the rental prices have to be the same for all operators. Therefore there is no competition between infrastructures. Cable operators instead generally own their own distribution networks.
- ✓ By the end of 1998, there were 18 companies operating cable Pay-TV distribution in the Portuguese territory. The most important group by far is TV Cabo Portugal, a holding company which owns 9 regional operators (and is in turn controlled by Portugal Telecom). TV Cabo Portugal counted in 1999 about 2 million households already passed and over half a million subscribers.
- ✓ Minor cable operators are Cabovisão and Bragatel, with approximately 50,000 subscribers each.
- ✓ TV Cabo started operating in 1992, aiming at national coverage. But Portugal Telecom decided in 1997 to limit cable network building to completing the coverage of the major urban areas. The capital is 90% cabled. More than 60% of the Portuguese population is concentrated in a massive coastal area stretching between Lisbon and Porto. Coverage of the rest of the country could not be profitable.
- ✓ Cabo TV distributes 15 TV channels on its cable networks (the same it broadcasts via satellite in digital) plus the two channels of the Premium TV joint venture between Telecom Portugal and private broadcaster SIC (Telecine 1 and Telecine 2). These two film channels are packaged in Brazil and are only available to TV Cabo cable subscribers, while the DTH subscribers still lack a premium film channel. Premium TV forecasts to achieve 70 000 subscribers by the end of 1999.

1.2.3 Situation of MMDS

The situation of MMDS has not altered since the end of 1998.

Its use up to now has been limited to Madeira and Azores islands, where it is difficult or uneconomical to use cable distribution (because of the low population density). The use of MMDS in the continental territory is not foreseen. However, the use of Digital Multipoint Distribution Systems (such as MVDS) is likely to be planned by the cable operators wherever it is difficult or uneconomical to implement cable distribution.

1.2.4 Situation of terrestrial digital television

Digital Terrestrial TV (DTTV) implementation in Portugal is currently limited to trial tests with the DVB-T system by Portugal Telecom. The trials have been implemented in the Lisbon area since June 1998, in order to study the technology and demonstrate the feasibility of fixed and portable reception. This experimentation is planned to end on September 30th, 1999. It is based on a Single Frequency Network (STN), with 3 transmitters operating in channel 64. The trials broadcast the 4 Portuguese national TV services.

The government however is interested in DTTV. ICP (the National Body for the Regulation of Communications) and ICS (the Social Communication Institute) launched in 1998 a joint public consultation concerning the introduction of terrestrial digital TV in Portugal, directed both to interested companies and to the general public. According to the Secretary of State responsible for Telecommunications, the consultation pointed to some market problems. On the one hand, the price of digital tv sets and set-top boxes was considered still too high for the average consumer. On the other hand, the Portuguese advertising market was considered too small to sustain a free-to-air DTTV service, in addition to existing TV services. The Telecommunications Secretary concluded that there were strong doubts at present on the economic viability of DTTV in Portugal.

But soon afterwards the Secretary of State responsible for Social Communication announced to the directors of the three free-to-air TV operators the launch of a call for bids for three DTTV licences before the end of 1999. Each of these networks might have 4 to 5 digital TV channels. A year after that, another call for bids for the production and delivery of the channels' contents was planned to be launched.

More recently, the press reported that the Portuguese government was preparing two public invitations to tender for DTTV: one for the networks, the second for multiplexing.

The main broadcasters (SIC, RTP) remain suspicious of the advantages claimed for DTTV and fear that the investment in new programming would be difficult to recover. According to media experts, the best placed operator to win the network license would certainly be Portugal Telecom, though with only two unwilling clients (SIC and RTP), it could be years before the investment in the network would be repaid.

TVI (the commercial channel launched at the same time as SIC, which built its own distribution network) might also be interested if it found a strategic (foreign) partner. TVI owns a valuable asset for DTTV: its network of 20 transmitters.

In any case, free-to-air digital TV is not likely to be available before the year 2002.

1.2.5 Market development

Digital TV is offered in Portugal only by TV Cabo via satellite since the end of 1998. It is too early to make any consistent comparison between the relative importance of Pay-TV DTH (direct to the home) versus the analogue cable TV market. Digital satellite subscribers are increasing faster than analogue cable ones: they were 42,000 at the end of the first semester 1999, that is 6.5%. of total subscribers (versus 4.6% at the end of 1998).

Pay-TV DTH however is an emerging market and its total value is still small. The total income of Cable TV at the end of 1998 amounted to around 100 MEuro. The Pay-TV DTH income represented only about 2 million Euro.

TV Cabo Portugal started recently to sell advertising space in some of its cable and satellite channels (see following table), with specific constraints: spots no longer than one minute, and never interrupting a programme. The total advertising investment in medias in Portugal reached 1,2 Billion Euro in 1998, of which 730 Million Euro for TV advertising. TV advertising revenues rose at an annual rate of approximately 18%.

Premium thematic channels appear to be a crucial factor driving DTH market expansion. The Sport TV channel is in fact chosen by 93% of the customers subscribing to satellite TV. As anticipated, allowing access to main sports broadcasts was one of the main reasons driving TV Cabo decision to launch the satellite service. Sport TV via satellite counted 28,000 subscribers at the end of 1998, while cable subscribers were 29,000.

Table 2 :The Top-10 Cable TV Channels (ranking by audience)

Cable TV Channels	Comments	Advertising Accepted
Cartoon Network		
Hollywood	Highest audience share among A/B social classes	Yes
GNT		
Eurosport	Target male audience	
Odisseia	Target male audience	Yes
Panda		Yes
RTP Africa		
Discovery	Target male audience	Yes
Viver		Yes
Sport-TV	Likely purchase driver: 93% of customers choose it when subscribing to satellite service Target male audience	Yes
Others		Sol Musica, People & Arts, CNBC, TV Galiza, Història

TV Cabo is planning to increase substantially the channels offered in its satellite bouquet, first of all by adding the 4 Portuguese free-to-air ones (negotiations with the main broadcasters are open). Since the present satellite Hispasat is saturated, TV Cabo negotiated with Via Digital an agreement to use 12 channels on the new satellite Hispasat 1C to be launched at the end of 1999, with an option for other 12 channels if and when the capacity will be needed. This satellite will cover Portugal, Spain, Madeira, Azores and part of Brazil. The operator plans also to launch interactive TV services, and to offer from the year 2000 the forthcoming digital terrestrial TV channels.

Commercial broadcaster SIC is also considering launching its own multi-channel service, probably via satellite. SIC is negotiating with Telecom Portugal a partnership in the launch of a new production company, in which it wants to have a majority share. It is rumoured that SIC is already working along these lines and preparing a news channel and a sports channel, which would directly compete with Sport TV. It is also said to be on the lookout for a strategic foreign partner. The French group TPS could be a possibility.

1.3 Details of services

TV Cabo Portugal analogue cable and digital satellite bouquets are described in the tables below. Within the basic cable package, 20 channels are either dubbed or with subtitles in the Portuguese language, mostly from Spain and Brazil. Several are adaptations of programmes originally made for the Spanish or the Latin American markets, not always appropriate for Portuguese viewers.

Telecine 1 and Telecine 2, the two cinema channels produced by joint venture Premium TV, are actually packaged in Brazil and beamed to Portugal. This results often in an erratic picture quality and in the fact that subtitles are in Brazilian and not in Portuguese.
Sport TV channel transmits all the footbal matches, with the exclusion of one match per week (which the government imposed must be diffused free-to-air) and of Benfica (the most popular club) home matches. Benfica in fact decided to sign its rights for home matches to SIC, the private free-to-air broadcaster.

Table 3 : Cable TV services

Offer	Description	Monthly Price
Cable Basic Package	44 channels	16,2 Euro
Cable Premium Channels	Sport TV	15 Euro
	ZEE TV	10 Euro
	Playboy	4,5 Euro
	Telecine 1 (recent hits), Telecine 2 (classic, popular movies)	10 Euro
Economic Package	20 channels (no subscription to Premium channels allowed)	10 Euro

Table 4 : Digital Satellite TV Services

Offer	Description	Monthly Price
Satellite Basic Package	14 channels: Hollywood (TV series) Odisseia (documentaries), Panda (nature), Sol Musica (Music), 24 Horas, BBC World, BBC Prime, Bloomberg, TV Galizia VH-1, MTV, Campero, Landscape and Parlamento (politics)	10,2 Euro
Satellite Premium Channels	Sport TV	15 Euro
	Playboy	4,5 Euro
EXTRA channels bouquet	5 channels: Locomotion, Red-2000, Cocina, Viver/Vivir, Eurosport	2,7 Euro

TV Cabo announced its plan to create 2 new news channels: CNL (Lisbon-based Canal de Noticias de Lisboa) and CNP (Porto based Canal de Noticias do Oporto). They will also be distributed via satellite.

Bragatel, a small Cable TV operator started offering Internet access in some districts in the North of Portugal at the end of September 1998. TV Cabo plans to launch Internet and other interactive services on its cable network, probably in the last quarter of 1999.

1.4 Operators and market structure

1.4.1 Concentration of the Pay - TV market

TV Cabo Portugal has almost a 90% market share of the Pay-TV market, and is the only operator of the Digital TV market so far. Its majority is owned by Portugal Telecom. But a further 20 to 25% of TV Cabo's stock is expected to be sold off in an initial public offering by the end of 1999.

After the 1997 Law which allowed cable operators to become also content providers, TV Cabo negotiated agreements with both the public broadcaster RTP and the private operator SIC to produce programmes. Two main joint ventures launched in 1998 were the result:

- ✓ **Premium TV** is a joint venture including TV Cabo, Portusat (a company owned by TV Globo of Brazil and SIC), the film distributor Lusomundo and Sport TV (see below). The company produces Telecine 1 and Telecine 2, two premium cinema channels for the cable networks (they are not distributed via satellite).
- ✓ **Sport TV** is another joint venture including TV Cabo Portugal, the public broadcaster RTP, the sports broker Olivedesportos and Premium TV. The company transmits the main football games (previously diffused for free by RTP).

A peculiarity of this market structure is that TV Cabo is allied with the two main competing broadcasters (RTP and SIC) in two different joint ventures.

1.4.2 Agreements between satellite operators, cable operators and DTT operators

The most important agreement involving a cable TV operator, signed in 1999, was the strategic partnership between TV Cabo Portugal and Microsoft Corp.

By this agreement, whose purpose was to speed up the introduction of new technologies and broadband, multimedia and mobile voice services in Portugal, Microsoft Corp. invested 36 million Euro in the acquisition of 2,5% of TV Cabo Portugal shares.

It is expected that the first effect of this partnership will be the rapid emergence of interactive services, Internet, etc., both on TV Cabo Portugal's networks .

1.5 Technical issues

The satellites Intelsat 806, Eutelsat 2F1/Hotbird, Astra, Express 2, Panam and Sat 5 supply the channels for the Cable TV bouquet.

TV Cabo uses Via Digital conditional access system, Nagravision, and interactive applications that are based on Open TV API.

Most DTH subscribers have installed SAGEM decoders: a minority use NOKIA or TEKA digital/analogue decoders.

TV receivers are mainly analogue. The 16:9 television market is still very small (around 100 units) and no detailed information on this subject is available. The small market can be justified by the relative high price of these televisions in comparison with the cost of those with a traditional format. At present, the price of the cheapest 16:9 TV set is four to five times higher than the cost of the cheapest normal television.

1.6 Conclusion

During 1998 and 1999, the Pay-TV market in Portugal grew quickly, not only because of the shift of main sports events broadcasts from Free-to-air to Pay-TV, but also thanks to the launch of new channels produced in partnership by the main cable TV operator, TV Cabo, and the traditional broadcasters RTP and SIC. The Government's decision to allow cable operators to produce their own programs therefore paved the way to vertical integration by TV Cabo.

Digital Satellite TV proved successful in the areas not reached by cable. TV Cabo plans to stimulate its further growth by multiplying channels on the new Hispasat satellite. There are already signs that some audience is shifting from the current Free-to-air TV to satellite. This will accelerate when the four terrestrial channels are included in the digital satellite package, especially where the quality of free-to-air channels reception is poor.

Cable channels grabbed an average 4% share of the audience, putting broadcasters under some pressure. Some cable TV channels already have audience share levels very close to SIC ones.

The government is soliciting bids for DTTV licences. Services are not expected to be launched before the year 2002. Main broadcasters RTP and SIC and some observers, however, are sceptical about DTTV commercial viability, especially if Satellite and Cable TV keep enrolling new subscribers fast.

2 Key figures for the Spanish market

2.1 Country fundamentals

	1993	1994	1995	1996	1997	1998
Population (millions)		9,910	9,920	9,940	9,950	9,960
Households (millions)		4,160	4,160	4,160	4,160	4,182
GDP (in Euro billions)		69,000	78,000	83,000	88,000	89,312

2.2 Equipment

As of 31 of December	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*
TV households (millions)	3,350	3,360	3,390	4,000	4,023	
TV households (% of total households)	80,5%	80,8%	81,5%	96,2%	96,2%	
TV Households with 2 TV sets or more (millions)	0,000	0,000	1,800	1,880	1,890	
TV Households with 2 TV sets or more (% of TV Households)	0,0%	0,0%	53,1%	47,0%	47,0%	
TV Households with 16:9 Television sets (millions)	0,000	0,000	0,000	0,001	0,000	
TV Households with 16:9 Television sets (% of TV Households)	0,0%	0,0%	0,0%	0,0%	0,0%	
VCR Households (millions)	1,260	1,630	1,810	1,850	1,932	
VCR Households (% of TV Households)	37,6%	48,5%	53,4%	46,3%	48,0%	
Digital STB Households (millions)	0,000	0,000	0,000	0,000	0,000	
Digital STB Households (% of TV Households)	0,0%	0,0%	0,0%	0,0%	0,0%	
IDTV Households (millions)	0,000	0,000	0,000	0,000	0,000	
Digital TV Households (% of TV households)	0,0%	0,0%	0,0%	0,0%	0,0%	
Digital Households (millions)	0,000	0,000	0,000	0,000	0,000	
Digital Households (% of TV households)	0,0%	0,0%	0,0%	0,0%	0,0%	

2.3 Access to DTV

Cable

	1993	1994	1995	1996	1997	1998
Home passed (millions)		0,100	0,380	0,980	1,470	1,827
of which digital (millions)		0,000	0,000	0,000	0,000	0,000
Home passed (% of TV households)		3,0%	11,3%	28,9%	36,8%	45,4%
of which digital (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,0%
Analogue Basic Subscribers (millions)		0,020	0,060	0,170	0,380	0,596
Digital package subscribers (millions)		0,000	0,000	0,000	0,000	0,000
Analogue Basic Subscribers (% of TV households)		0,6%	1,8%	5,0%	9,5%	14,8%
Digital package subscribers (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,0%

Satellite

	1993	1994	1995	1996	1997	1998
Satellite households (millions)		0,100	0,140	0,230	0,390	0,000
Satellite households (% of TV households)		3,0%	4,2%	6,8%	9,7%	0,0%
Satellite subscribers (millions)		0,000	0,000	0,000	0,000	0,000
Satellite subscribers (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,0%
of which digital (millions)		0,000	0,000	0,000	0,000	0,000
of which digital (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,0%

Terrestrial TV

	1993	1994	1995	1996	1997	1998
Analogue Pay-TV services						
Pay-TV subscribers (millions)		0,000	0,000	0,000	0,000	0,000
Pay-TV subscribers (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,0%
***Digital TV services**						
Homes covered (millions)		0,000	0,000	0,000	0,000	0,000
Homes covered (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,0%
IDTV households (millions)		0,000	0,000	0,000	0,000	0,000
IDTV households (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,0%
Pay-TV households (millions)		0,000	0,000	0,000	0,000	0,000
Pay-TV households (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,0%

MMDS

1993	1994	1995	1996	1997	1998
Home passed (millions)	0,000	0,000	0,000	0,000	0,000
of which digital (millions)	0,000	0,000	0,000	0,035	0,035
Home passed (% of TV households)	0,0%	0,0%	0,0%	0,0%	0,0%
of which digital (% of TV households)	0,0%	0,0%	0,0%	0,9%	0,9%
Analogue only Basic Subscribers (millions)	0,000	0,000	0,000	0,000	0,000
Analogue only Optional services subscribers (millions)	0,000	0,000	0,000	0,000	0,000
Digital package subscribers (millions)	0,000	0,000	0,000	0,000	0,000
Analogue only Basic Subscribers (% of TV households)	0,0%	0,0%	0,0%	0,0%	0,0%
Analogue only Optional services subscribers (% of TV households)	0,0%	0,0%	0,0%	0,0%	0,0%
Digital package subscribers (% of TV households)	0,0%	0,0%	0,0%	0,0%	0,0%

2.4 Television market estimates*

Millions Euros	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*
Analogue TV Market						
Public funding		0,000	0,000	0,000	0,000	0,000
Advertising (Note 1)		342,000	393,000	496,000	602,000	725,000
Subscription		0,000	0,000	0,000	0,000	0,000
Total analogue TV		342,000	393,000	496,000	602,000	725,000
Digital TV Market						
Public funding		0,000	0,000	0,000	0,000	0,000
Advertising		0,000	0,000	0,000	0,000	0,000
Subscription		0,000	0,000	0,000	0,000	0,000
Total digital TV		0,000	0,000	0,000	0,000	0,000
TV Market						
Public funding		0,000	0,000	0,000	0,000	0,000
Advertising		342,000	393,000	496,000	602,000	725,000
Subscription		0,000	0,000	0,000	0,000	0,000
Total TV market.		342,000	393,000	496,000	602,000	725,000

Note 1 - only for terrestrial free-on-air TV

** "**Public funding**" comprise grants and licence fees; "**Advertising**" also includes sponsoring expenditures whereas "**Subscriptions**" cover subscriptions to the basic multi-channel package as well as subscriptions to Premium pay-TV services.*