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Development of Digital TV in Europe

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1 Digital TV market overview

With 36.5 million TV households, Germany is the largest television market in Europe, and also the largest cable TV (more than 19.2 million households connected) and satellite market (11.4 million households). Digital television services, however, have experienced a rather slow deployment, and the market still lags behind its counterparts in the UK, France and Italy. A major reason for this rather dissatisfying development is the competition from the large offer of free-to-air TV programmes. About 84% of all TV households receive more than 30 free-to-air programmes, either via cable or satellite.

The most important event during the period from July 1998 to June 1999 was Bertelsmann's withdrawal from the pay-TV-market. In March 1999, Bertelsmann's CLT-Ufa sold its shares of Premiere pay-TV service to Kirch Group (except for a remainder of 5%). In October 1999, Premiere and DF1 will be merged into a new package, probably named "Premiere World".

1.1 Roll-out of digital services

Access to digital TV services in Germany is possible either via cable TV networks or via satellite. Digitisation of terrestrial TV is being tested in a number of trials, but there is an ongoing debate about the plans and the importance of digitising terrestrial broadcasting. The controversial issue is if terrestrial digitisation is worth the investment, considering that 84% of all TV households already have access to cable or satellite.

1.1.1 Satellite digital services

The penetration of private satellite dishes in German households is quite high compared to the European average. About 11.4 million households in Germany (31% of TVHH) receive television programmes via satellite, and the estimate is that about 350,000 of these are capable of receiving digital programmes (mid 1999). In May 1999, about 310,000 households were subscribers to digital pay-TV programmes available through ASTRA satellites 1E, 1F, and 1G.

Genuine German services offered via digital satellite are:

- ✓ **DF1**, Kirch group's pay-TV service (about 173,000 subscribers via satellite in May 1999¹)
- ✓ **Premiere digital**, Bertelsmann's pay-TV service (about 134,000 satellite subscribers in May 1999²)

¹ information by DF1, July 1999

² information by Premiere, 11th June 1999 (questionnaire)

- ✓ **ARD digital** and **ZDF.vision**, the (free) digital packages of the public service broadcasters
- ✓ Most of the nation-wide receivable commercial programmes such as RTL, SuperRTL, RTL2, Sat1, Kabel1 and ProSieben are transmitted via satellite both in analogue and digital standard (via ASTRA or EUTELSAT). Digital satellite households therefore receive the full range of German TV programmes plus an additional offer of channels which are only available with digital receivers (e.g. some foreign channels).

The diffusion of digital satellite receivers in Germany is not as fast as in France or Spain. SES/ASTRA estimated the total number of digital satellite receivers in Germany at about 250,000 units for mid 1998. Experts, however, doubt that figure and give more conservative estimates.³ Techno-Z estimates that about 330,000 - 350,000 digital receivers are in the market in mid 1999. This estimate is based on the number of satellite subscribers of DF1 and Premiere digital package, with an additional figure of 20,000 - 40,000 digital free-to-air-satellite-receivers.⁴

The most probable development scenario is a gradual "upgrade" of analogue satellite receivers to digital ones, as more services become exclusively available via digital satellite. For the time being, however, cable TV networks are the most important access infrastructure to digital services.

1.1.2 Cable digital services

About 19.2 million⁵ households in Germany, i.e. about 53% of all TV households, are connected to a cable TV network. These households are paying a subscription fee to the cable network provider (either to Deutsche Telekom or to a private cable operator) for the use of the cable infrastructure. The fee is usually between 20 and 26 DM per month (10 - 13 Euro), depending on the number of units connected per building.

From a subscriber's perspective, the cable fee is clearly paid for content, i.e. access to a package of programmes, although they are in fact paying the infrastructure provider and not the content providers. But this type of "basic subscription" to a cable network is a prerequisite to be able to subscribe to a "premium (pay-TV) service" such as Premiere or DF1 via cable.

Access to cable - a critical success factor

The late access to cable networks is considered to be an important factor for the slow deployment of DTV services in 1996 and 1997. DF1 is an example to illustrate this point. DF1 initially offered its services via satellite only and could not start to market its programme via cable before autumn 1997. The reasons for this delay were twofold: first, the technical

³ cf. Zimmer, Jochen (1998): Fernsehempfang: In Zukunft Satellit vor Kabel? In: Media Perspektiven, 7/1998, p. 352-365. p. 364

⁴ For comparison: ZDF estimates that there are about 15,000 to 20,000 free-to-air-decoders.

⁵ Figure includes subscribers to Deutsche Telekom (17.7 million) and subscribers to other (private) cable TV networks (estimate: about 1.5 million).

infrastructure to deliver digital programmes via cable into the homes was not in place, and second, procedures for the application, negotiation and allocation of digital cable TV licences by the Landesmedienanstalten caused further delay.

In the meantime, the digitisation of the cable network of Deutsche Telekom has been finished. Deutsche Telekom reports that all of the 17.7 million households connected to its network are technically in a position to receive digital services (e.g. DF1, Premiere).⁶

In June 1999, about 62% (i.e. 505,000 households) of subscribers to digital pay-TV services received the service via cable TV networks. The relative importance of cable is likely to increase in the future, as Deutsche Telekom is expected to sell large parts of its cable net to private companies. Private network providers are more likely to extend cable services from conventional television to new services, such as the provision of Internet access or telephone services.

To have access to cable networks, service providers need licences issued by the Landesmedienanstalten (the media regulation authorities of the Bundeslaender). In June 1999, though most of the Landesmedienanstalten have granted licences, none of the providers owns a national licence change throughout to feed its digital programmes into the cable-TV network.

- ✓ **DF1** is fed into cable networks in all of the 16 Bundeslaender but 2 (Schleswig-Holstein and Mecklenburg-Vorpommern). About 50% of the DF1 subscribers receive the service via cable (June 1999). DF1 states that about 60% of all new subscriptions have been cable subscriptions (40% satellite), since Deutsche Telekom had opened its cable network for DF1 in October 1997.⁷
- ✓ **Premiere Digital** is fed into the network of Deutsche Telekom in all of the 16 Bundeslaender. About 70% of the subscribers receive the service via cable.
- ✓ The digital packages of the public service broadcasters **ARD and ZDF** are fed into all cable networks in each of the Bundeslaender.

Digitisation of the cable TV network of Deutsche Telekom

Deutsche Telekom has updated and digitised its cable TV network according to international standards for DVB Digital Video Broadcasting. The major effort was taken in 1998, and digitisation was finished by the end of that year. As a result, all of the 17.7 million households connected to Deutsche Telekom cable are in a position to receive digital programmes.⁸

However, Deutsche Telekom is not willing to further advance the technical infrastructure of its cable network with regard to bi-directionality, i.e. the implementation of a return channel for interactive services.

⁶ data provided by Deutsche Telekom.

⁷ DF1 press release, 1st October 1998

⁸ At the end of 1997, only about 500,000 cable TV households were in a position to access digital services (information by DT). There are no figures available on the percentage of digitisation of the smaller private cable networks.

The major reason is related to the ownership structure in the German market for cable TV networks. Deutsche Telekom operates the underlying technical network for about 92% of German cable households. Yet, it only reaches about 30% of cable TV subscribers directly. 70% of the subscribers are served by small cable operators. They provide the connection between the basic backbone of Deutsche Telekom and the households. In these cases, subscription fees are paid to the private cable operator, and Deutsche Telekom only receives a small percentage of these revenues. In May 1999, Franz Arnold, responsible for the broadband cable of the Telekom, declared that the Deutsche Telekom would not make new investments before parts of the cable network are sold. Otherwise, DT would only bear the investment cost without earning back the (long-term) revenues.⁹

Utilising the hyperband capacities of the network (frequencies from 326 - 446 MHz), the new digital multiplexes have been made available to content providers according to a decision of the DLM (the Landesmedienanstalten Directors' Conference) from 1997.¹⁰ A decision for the reallocation of channels is expected for August 1999. The DLM has already announced the following preliminary allocation of the 13 MUX (each having a capacity to accommodate about 5-6 programmes) available¹¹:

- ✓ 5 MUX for DF1 and Premiere digital
- ✓ 3 MUX for the public service broadcasters ARD and ZDF
- ✓ 3 MUX for regional programmes and foreign programmes

Only 2 MUX have not been allocated yet and are still available for other service providers. Applications for these MUX have already been made. Bertelsmann subsidiary CLT/UFA is making initial plans to launch an interactive extension of its RTL programme and has requested 3 (!) MUX for this service.¹² tm3, the Munich based programme which has recently bought the German rights for the European Soccer Champions League, and @TV have also requested the allocation of a MUX for their services.

The capacity of the digital cable net of Telekom cannot satisfy all these requests. However, it is doubtful if Deutsche Telekom will make investments to increase the capacity before a final decision concerning the sale of the network has been taken.

1.1.3 Situation of MMDS

New access technologies such as MMDS or xDSL are not used under market conditions yet. xDSL is considered to become an important infrastructure for access to interactive services in the long term. For the time being, trials are focusing on technical aspects rather than on the acceptance of services.

⁹ cf. epd medien, May 22nd, 1999.

¹⁰ It lies within the responsibility of the Landesmedienanstalten (the media authorities of the Laender) to decide which programmes are fed into the digital cable networks.

¹¹ w&v, 26/99, July 2nd, 1999

¹² w&v, 26/99, July 2nd, 1999

1.1.4 Situation of terrestrial digital television

Germany has set the path towards digital terrestrial television, but many questions remain unanswered. Representatives of public and private broadcasting stations, together with important market players such as Deutsche Telekom and politicians formed an expert group in 1997 called »Initiative Digitaler Rundfunk« (Digital Broadcasting Initiative), in order to discuss scenarios for the transition from analogue to digital terrestrial television in Germany.¹³

In the consortium debates, it became clear that the only possible way to switch from analogue to digital terrestrial TV would be a revolutionary and abrupt switch. This would follow a regional approach, i.e. performing abrupt switches in a sequence of defined areas, but not in the whole country at the same time. A long simulcasting phase with analogue and digital programmes being broadcast simultaneously would be too costly.

There is a debate in Germany whether it still makes sense to have a full coverage by terrestrial broadcasting, taking into account that only about 15% of households are receiving TV programmes via terrestrial signal. These considerations will play an important role with regard to switching to DTT. The question will be if the advantages of the DVB-T standard (e.g. portability, mobile) can outweigh the fact that the relative importance of terrestrial broadcasting decreases compared with cable and satellite.

Other important questions arising are the provision of low cost terrestrial set-top boxes, and if the consumer will have to pay the cost. New decoders for reception of interactive digital terrestrial television will be presented at IFA 1999 (International Broadcasting Fair, Berlin).¹⁴

The transition towards DTTV is planned to start in the year 2000 and should be finished by 2010 (on the condition that by that time 95% of all receiver equipment in German television households will be capable for receiving digital programming either via satellite, cable or digital terrestrial transmission). It has not yet been decided which region should be digitised first.

Time frame for the switching from analogue to digital terrestrial television

Beginning of 2000	Start to set up digital terrestrial broadcasting stations. These stations are supposed to broadcast programmes to pave the way for DVB-T under market conditions. Termination of building new analogue terrestrial broadcasting networks, existing networks will not be extended, except if necessary to prepare the switch to digital.
2003	Review and evaluation of these objectives in the context of the international development and the diffusion of equipment in households.
2010	Full digitisation of terrestrial TV. Termination of analogue terrestrial broadcasting on the condition that 95% of all households have got digital receivers.

In order to eliminate all technical problems prior to the operational start of digital terrestrial broadcasting, a number of trials have been started in Germany. Mobile reception is an issue in all of these trials. The trials have primarily technical objectives and are not focusing on testing the acceptance of services.¹⁵

¹³ The group was installed by the so-called Forum TV2000.

¹⁴ Among others, Nokia will present a STB for stationary reception (as being used in UK, for instance) and another prototype for mobile reception of interactive DTT. Cf. "Digital TV übernimmt neue Aufgaben", in: Süddeutsche Zeitung, 12th July 1999

¹⁵ telephone interview with Mr. Schneeberger from the IRT (Institute for Broadcasting Technology) on June 11th, 1999.

Location of the pilot project	Carrier	Number of packages / programmes	Time frame of the pilot project	No. of transmitters	Main objectives
Berlin/ Brandenburg	Deutsche Telekom, Regulatory Media Authority of Berlin-Brandenburg ¹⁶	4 packages with 16 programmes	Started on the International Broadcasting Fair (IFA) in August 1997	8 transmitters	Portable reception, single frequency network and development of strategies for market launch.
	Sender Freies Berlin	1 package with 4 programmes		1 transmitter	
Munich	Bavarian Media Technology GmbH (BMT), Bavarian public service broadcasting station (BR), Deutsche Telekom, Institute for Broadcasting Technology (IRT), Rohde & Schwarz.	1 package with 4 programmes	1997 – 12/1999 (will probably be prolonged)	3 transmitters	portable indoor reception. mobile reception is also tested, but technically difficult to realise within a single frequency network. ¹⁷

Location of the pilot project	Carrier	Number of packages / programmes	Time frame of the pilot project	No. of transmitters	Main objectives
Northern Germany (Lower Saxony)	Landesmedienanstalten of Lower Saxony, Hamburg, Bremen; NDR, Radio Bremen, ZDF, Regulatory Authority for Telecommunication and Postal Services (RegTP), Deutsche Telekom, Institute for Telecommunications of the Technical University of Braunschweig.	2 packages with 6 programmes	CeBIT HOME '98 (08/1998) – EXPO 2000 at Hannover (12/2000)	24 transmitters	Mainly mobile reception within a multi-frequency network along the highways between Bremen, Braunschweig, Hannover, Hamburg and Wolfsburg.
Northrhine-Westphalia (Cologne)	Deutsche Telekom and the private commercial TV stations RTL, SAT1, VOX and VIVA. ¹⁸	1 package with 4 programmes	June 1998 – June 2000	1 transmitter	mobile and portable indoor reception
Langenberg	Western German public service broadcasting station (WDR)	not yet defined	not yet defined	3 transmitters	
Saxony	Deutsche Telekom and the Regulatory Media Authority of Saxony	2 packages	Spring 1998 – Summer 1999	4 transmitters	Cost-effective solution for the transmission of local and regional contents within a single frequency network.

¹⁶ cf. www.mabb.de¹⁷ cf. interview with Herbert Tillmann, Technical Director of BR on June 14th, 1999.¹⁸ cf. www.lfr.de

1.1.5 Market development

In May 1999, the German digital pay-TV market had about 813,000 subscribers (466,000 subscribers to Premiere digital and 347,000 to DF1¹⁹). This is an increase of 23% compared to the end of 1998. The growth rate in 1998 was 200%. The majority of pay-TV subscribers is still in the analogue market (1.1 million subscribers of the analogue package of Premiere in May 1999), but the balance will change towards digital services as more and more subscribers "upgrade" their Premiere subscription from analogue to digital.

Digital TV in Germany is almost exclusively related to the pay TV services of DF1 and Premiere. The digital packages of ARD and ZDF are still in an experimental stage. These have not yet been an incentive to buy a digital free-to-air-receiver except for very few customers.²⁰ However, it has to be considered that digital free-to-air-receivers are offered in the German market only since November 1998.

The service of the Deutsche Telekom subsidiary MSG is in a similar status. Parts of the package which MSG will officially launch at the IFA 1999 (International Broadcasting Fair in Berlin) are already being tested in a trial.

Digital TV services available in Germany (May 1999)

Name of the service	Ownership	Date of launch	No. of subscribers
(as of May 1999)			
ARD digital	ARD	August 1997 (at the International Broadcasting Fair)	no data available
DF1	100 % Kirch-Group	July 1996 via Satellite, October 1997 via cable	347,000 (May 1999)
MSG	Media Services GmbH	February 1999 (trial), Official launch at IFA 1999 (September)	service not yet available (except for some programmes)
Premiere digital	95 % Kirch-Group, 5 % CLT/Ufa ²¹	February 1997	470,000 (May 1999)
ZDF.vision	ZDF	August 1997 (at the International Broadcasting Fair)	no data available

Techno-Z estimates the German digital TV market (1998) at about 155 million Euro.²² This is about 6.1% of the total pay-TV market²³ and 1.5% of the total German TV market. The market share was only 0.4% in 1997.

¹⁹ figures provided by DF1 and Premiere

²⁰ Figures are not available. Techno-Z estimates the number of digital free-to-air receivers between 20,000 and 40,000.

²¹ since March 1999. For details see «Concentration of the pay-TV-market»

Digital (pay-)TV will experience a further increase as the analogue subscriber base of Premiere moves over to the digital package. The new service to be launched in October ("Premiere world") will be a major incentive both for the existing subscriber base as well as for potential new subscribers. However, it will not gain a two-digit share of the total TV market within the next 2 years.

The digital pay-TV services of DF1 and Premiere are exclusively financed by subscription fees. There are no advertising revenues. Comparing the German pay-TV market to the free-to-air TV markets therefore basically means comparing subscription revenues to advertising revenues (plus public service broadcasting fees).

German TV market: pay-TV revenues as part of total TV

	Total TV market	Total pay-TV market *	Premium pay-TV (without basic cable subscription)	Digital pay-TV market		
	M Euro	M Euro	M Euro	M Euro	% of total market	% of total pay-TV *
1996	8,757	1,994	324	3	0.0	0.1
1997	9,657	2,406	379	41	0.4	1.7
1998	10,037	2,564	359	155	1.5	6.1

* including fees cable households are paying for basic subscription (either to Deutsche Telekom or to a private network operator) – optional services (Premiere analogue) are only a small percentage of the total revenues from pay-TV

There are no figures available about the subscriber profiles of the digital (pay-TV) services. These data are absolutely confidential. Neither DF1 nor Premiere are willing to provide information on their customer profiles. Since these services are not financed by advertising, they need not publish these data (in contrast to the commercial free-to-air channels who have to provide user profiles to the advertising industry).

1.1.6 Barriers to competition and market development

Dominance of the d-box – a market barrier?

The dominant position of the d-box in the decoder market has been criticised by potential new-comers as a barrier to competition. The position of the d-box has been further strengthened by the decision of Deutsche Telekom to use the d-box as the standard receiver for future digital cable TV subscriptions (see "decoder issues").

²² Calculation based on the average number of subscribers during 1998, the subscription fees for the standard package and a calculation for additional revenues through pay-per-view (based on information available about the percentage of subscribers using PPV services). For Premiere, figures for the annual revenue are available, but these include Germany and Austria, and both the digital and the analogue package.

²³ including basic subscription to cable networks

In defence of its activities, Kirch Group stresses the fact that the API source code for the d-box has been made available by BetaResearch in January 1999. At this time (mid 1999), however, it is not possible to subscribe to DF1 or Premiere with another decoder than the d-box. Subscription to a bouquet of DF 1 / Premiere World is only possible in combination with the purchase or rent of a d-box.

There is some debate about BetaResearch's licensing practices regarding the CA specifications of the Irdeto system. BetaResearch says it would be willing to license the CA specifications allowing other manufactures to simulcrypt; other hardware suppliers (e.g. Technisat) have complained that the licensing practices of BetaResearch were unacceptable (licence too expensive, endless negotiations).²⁴

Technical aspects - interference of signals

The technical difficulties to simulcast analogue and digital TV services via cable may increase in the near future. Due to technical provisions of the RegTP (German regulatory authority for telecommunications and postal services), signals of cable TV networks may interfere with important radio communication services from ambulances, police, fire brigades, aeroplanes and ground stations. Because of this interference, the German government decided to ban five channels from the German cable networks in 2005, which would not only reduce the number of analogue but also of digital channels.

Complexity of the regulatory system

In May 1999, an analysis from Booz, Allen & Hamilton, commissioned by Bertelsmann, criticised the fragmented legal competencies for media and telecommunication companies, which are shared by 18 different authorities. The analysis summarised that the complexity of German authorities hinders the growth of the market.²⁵

Furthermore, players in the digital TV sector complain that the lack of a unambiguous regulatory environment and the slow decision making processes hamper market development and make the German market vulnerable to becoming a prey for foreign investors.

²⁴ It would be possible for a regulator to insist that Kirch simulcrypt with another platform, on the model of the BIB case where Sky has to hold itself open for any other broadcaster to simulcrypt. The TV Standards Directive of the European Parliament and of the Council (Directive 95/47/EC) allows proprietary conditional access systems, but requires that these systems be made available on "fair, reasonable and non-discriminatory terms" to third-party manufacturers.

²⁵ cf. Kabel & Satellit, May 17th, 1999.

1.2 Details of services

1.2.1 Number and type of services

There are about 70 digital German free-to-air and pay-TV channels receivable via ASTRA and EUTELSAT:

30	Channels of DF1, (3 of which non-encrypted: H.O.T., MTV and DF1-Infokanal)
4	Channels of Premiere digital, (all encrypted)
14	Channels of the digital ARD-Bouquet
8	Channels of the digital ZDF-Bouquet
13	Private free-TV-channels (Bloomberg TV, DSF, Kabel1, NBC/Giga TV, n-tv, ProSieben, RTL, RTL2, SuperRTL, Sat1, VIVA, VIVA ZWEI, VOX)
69	German digital channels via satellite (ASTRA + EUTELSAT)

Due to the lack of frequencies it is not possible to feed all the satellite programmes into the cable networks. However, the majority of these (digital) channels is also receivable via cable.

Some of these programmes are German versions of foreign programmes or foreign programmes as part of the pay-TV packages of DF1:

- ✓ 13th Street (provider: Universal Networks Germany within DF1)
- ✓ BBC Prime (original version – part of the DF1 packages)
- ✓ Bloomberg TV (simulcast via satellite)
- ✓ Cine Classics I (provider: Multithématiques within DF1)
- ✓ Cine Classics II (provider: Multithématiques within DF1)
- ✓ CNBC (within DF1) – German version
- ✓ MTV Germany (simulcast via satellite, the digital version within DF1)
- ✓ NBC (within DF1)
- ✓ Planet (provider: Multithématiques within DF1)
- ✓ Discovery Channel (within DF1)
- ✓ Seasons (provider: Multithématiques within DF1)
- ✓ VH-1 (within DF1)

The current offering - as well as services planned for the future - consist of more or less conventional television channels. The only interactive services commercially launched in the market are pay-per-view-services for near-video-on-demand of DF1 and Premiere Digital, and the Formula One offer of DF1 allowing the consumer to choose from several camera perspectives.

Converging technologies may provide new incentives to the future digital television market. The public service broadcasters ARD and ZDF are currently running pilots to bring the Internet onto the television screen and/or to offer web-TV services.

- ✓ **ZDF** is co-operating with **Intel Intercast** push technology to offer selected TV contents as regular news-flash on the computer screen.
- ✓ ARD is testing a service that combines the content of its website with TV programmes. The **ARD-Online-Kanal** is being tested in a trial. It is part of the digital ARD-Bouquet and offers selected Internet pages and multimedia content to be viewed on the television screen. Receiver technology is based on the set-top-boxes of OpenTV with conventional TV sets. In order to offer the service on the d-box, ARD would have to convert the applications from open TV to the Beta API. Although the source code has been made available, ARD criticised that the d-box API was technically very much intertwined to the hardware specifications of the d-box, which would makes it very difficult for other service providers to convert their services to the d-box API. Beta-Research does not accept that criticism, arguing that it would in fact not be a problem to make the ARD-EPG available for the d-box. The criticism of ARD was motivated by "political reasons only", according to Gabor Toth, managing director of BetaResearch.²⁶
- ✓ Some interactive services on television are bringing Internet to the TV screen or use TV cable networks for Internet access. In order to obtain these kind of services, German households can choose between different types of hardware solutions (e.g. the "Webbox", Loewe's TV-PC hybrid, PC+ streaming video software, DVB/PC card, PC+ Wincast TV card).

1.2.2 Details of the DTV offers

DF1

DF1 offers more than 30 thematic channels to which consumers can subscribe in four different packages. About 96% of the subscribers opt for the "**Super-package**" which contains most channels of DF1 at a price of 20 Euro. The other packages offered are less comprehensive and cost between 10 to 18 Euro. Five channels are available for subscription on a per-channel basis. If customers subscribe to them without subscribing to one of the four basic packages, they have to pay a higher price. (6-11 Euro vs. 3-7 Euro if subscription is in addition to a DF1 package).

²⁶ cf. epd medium 66/99, 25th August 1999

In addition, subscribers may order individual services via pay-per-view (about 2.5 Euro per movie) which is offered in form of near-video-on-demand. DF1-subscribers may buy the necessary decoder, the d-box, for 460 Euro or rent it for about 5 Euro per month.²⁷

The marketing campaign of DF1 particularly stresses the wealth of programmes categorised into special interest channels, the ability to see feature movies from the living room, and the opportunity to view the Formula One with an option of six different camera angles. There are special first time subscription deals.

DF1 intends to launch some additional channels, depending on the planned merger with Premiere. One of the new channels is supposed to be launched in co-operation with Disney corporation within DF1/Premiere.²⁸ Other new programmes will most probably be special interest channels.

Premiere

Pay-TV provider Premiere is migrating progressively from analogue to digital transmission and is equipping subscribers with digital decoders.

Premiere digital offers a standard package of three multiplex and four pay-per-view channels. There are no options between different configurations of packages. Contents include movies, sports and live concerts. Pay-per-view follows the principle of NVoD.

Premiere uses a slightly different marketing strategy than DF1. Premiere which started off as an analogue pay-TV service in 1991 and entered the digital market in 1997 focuses on high quality, up-to-date contents and large choice of feature movies in its marketing campaigns. The campaign also stresses that the »new digital Premiere« offers more entertainment in digital visual and audio quality, but the focus is clearly on quality of content (new movie hits, live-events, soccer, documentaries and erotic movies).

The services of Premiere digital cost the same as the analogue package (about 20 Euro per month), but the rent of the d-box for the digital package amounts to 10 Euro instead of 5 Euro for the analogue decoder. A movie ordered per pay-per-view costs 3 Euro, i.e. exactly the same as the pay-per-view-offer from DF1.²⁹

Premiere offers special first time subscription deals which are pushed hard on television and in print media around the holiday season and around Christmas time.

Premiere intends to launch additional channels. Licences for new channels have already been granted by the Landesmedienanstalten of Bavaria and Hamburg. In March 1999, the Bavarian Landesmedienanstalt licensed the channels Premiere Fun TV, Premiere Crime TV, Premiere Golden TV, Premiere Sport, Premiere Sport Plus, Premiere Golf and Premiere Comedy, and the Landesmedienanstalt of Hamburg granted licences for Premiere Premium, Premiere Pay per View, Premiere Infokanal, Premiere Adventure, Premiere Erotica, Premiere Science Fiction, Premiere Blockbuster, Premiere Kids and Premiere Romance.

²⁷ cf. DF1-Magazin, 6/1999, p. 43.

²⁸ cf. Süddeutsche Zeitung, March 4th, 1999.

²⁹ cf. www.premiere.de, June 10th, 1999.

"Premiere world" - the merger of DF1 and Premiere

After the take-over of Premiere by Kirch Group, a new service will be launched in autumn 1999. It is expected that a combined package of Premiere and DF1 will be launched under the name of "Premiere world", offering a package of up to 45 channels.

The package will probably get a new EPG and not use T.O.N.I. which is currently used by DF1. Some of the channels now available on DF1 may not be continued.³⁰

Digital offers of the public service broadcasters

ZDF.vision is the digital package of ZDF delivered through ASTRA 1G³¹, was introduced to the public at IFA (Internationale Funkausstellung) 1997. ZDF plans to launch a new theatre channel within its digital bouquet by the end of 1999. While the other thematic channels of ZDF such as "Kinderkanal" (kids' channel) and "Phoenix" are simulcast in analogue and digital formats, the new theatre channel will be exclusively digital. Other plans of ZDF include the launch of ZDF.infoBox II and ZDF.digitext. All of these services would be part of the multiplexing channel reserved for ZDF in the cable network and would not require new transmission capacities.

ARD launched its digital package as a trial at IFA 1997. The package makes the ARD programmes of the analogue service digitally available and adds three programme channels, an Electronic Programme Guide and the Online Kanal. The ARD Online Kanal was originally established to provide additional background stories to the daily news-feed of the analogue programme. The Online Kanal offers news, weather and a selection of pages from the ARD Online site on the WWW. The overall budget for the digital television ventures of ARD in 1998 was about DM 12.3 million (6.15 million Euro).

There is some debate as to whether public service broadcasters should extend their services using digital TV. The digital pilot projects of ARD and ZDF are 100% financed through broadcasting fees from viewers. The Association of Private Broadcasting and Telecommunication Providers (VPRT) demands a limit to the expansion of public service broadcasting to be defined in the fourth "Rundfunkänderungsstaatsvertrag".³²

³⁰ cf. interview with Premiere on June 14th, 1999.

³¹ On ASTRA 1G, the complete transponder 115 is available with about 35 Mbit/s.

³² cf. w&v, March 19th, 1999.

MSG - Media Services GmbH

On 1st February 1999 Deutsche Telekom founded **Media Services GmbH** (MSG) as a 100% subsidiary. The business of MSG is to market services for the digital cable network (e.g. packaging of programmes, marketing, subscriber management).

As a follow-up of former "T-medianet", MSG is planning to launch a digital package at the IFA 1999, called "MediaVision". MSG has initiated some market studies to analyse the price elasticity for marketing a digital package on a per-channel basis. Pay-per-view services may be considered in the long term. Services will require the d-box as a decoder, which is offered by MSG for rent as well as for sale. The price of the d-box depends on the package the customer subscribes to. It is 400 Euro for receiving free-to-air TV programmes, and 275 Euro if the customers subscribe to a pay-TV package for at least 12 months.³³ The monthly rate for rental is 7.5 Euro (only available in combination with a pay-TV subscription).

The digital package of MSG will contain the following channels:³⁴

- ✓ 7 channels in foreign language (these can currently be received free of charge and unencrypted)
- ✓ Bet on Jazz: music channel (not yet available)
- ✓ Landscape: pictures of landscapes with classical music (not yet available)
- ✓ Bloomberg TV: economy and financial services (not yet available)
- ✓ f.tv: fashion TV - a French programme (not yet available)
- ✓ zee-tv: already available (encrypted) for about 18 Euro per month³⁵

The primary objective of MSG, however, is to market other digital services to be distributed in the cable net rather than produce their own programmes. The digital package of MSG will thus be a platform for other service providers. An example for this type of co-operation could be @TV.

³³ data provided by Media Services GmbH on June 17th, 1999.

³⁴ information provided by Deutsche Telekom

³⁵ <http://www.mediavision.de>, Dec. 1999

@TV

Based on the former (1998) plans for "Arena Vision", a new digital TV bouquet called @TV is planned to start in late 1999 or early 2000.³⁶ The project was initiated by Michael Oplesch, the former managing director of MTV Germany. In spring 1999, @TV applied to the Landesmedienanstalt of Hamburg (HAM) for a license for 10 digital pay TV programmes together with 14 pay-per-view channels (the number to be increased up to 28 over time). The focus of the programme is on health and wellness, travel and leisure, erotic content, music, comedy, extreme sports, Christian TV, children TV, an independent movies.

The package will be marketed by the MSG. Customers who subscribe to the basic package of MSG will be given the choice to additionally subscribe to individual programmes of @TV at a price of about 0.5 to 1 Euro per programme. Pay-per-programme subscriptions would be a contrast to the offers of Premiere Digital or DF1, where subscription is only possible to quite extensive packages.

@TV will require the second generation of the d-box as a decoder box. The first generation d-box cannot be used, since @TV will consist of a combination of conventional television contents and interactive services, mainly in form of links from TV broadcasts to the Internet. The new d-box will be capable of interactive multimedia-services.

@TV will market mainly its own productions, with a few exceptions. There are plans to cooperate with Sundance festival for an independent movie channel and for a channel provided by the erotic-company Beate Uhse ("Erotik@TV").³⁷

Digital services of the commercial free-to-air programmes

In June 1999, Bertelsmann declared its intention to (re)launch the digital RTL-bouquet, which was already planned for 1996, by the end of this year. Services include a news channel, a weather channel, tele-shopping and various new combinations of the RTL, RTL2 and SuperRTL programmes. CLT-Ufa has claimed its demand for up to three MUX channels in the cable net.³⁸

³⁶ interview with @TV on June 15th, 1999.

³⁷ cf. tv-media 22/1999, p. 12.

³⁸ cf. Sueddeutsche Zeitung, June 19th, 1999.

1.3 Operators and market structure

1.3.1 Evolution of market organisation and structure

The most important event during the period from July 1998 to June 1999 was Bertelsmann's withdrawal from the pay-TV-market. In March 1999, Bertelsmann AG subsidiary CLT-Ufa sold its shares of Premiere pay-TV service to Kirch Group (except for a 5% holding), which now owns 100 % of DF1 and 95 % of Premiere. In October 1999, Premiere and DF1 will be merged into a new package, probably named "Premiere World". Details are not yet available. Managers of Kirch Group are talking about the "last chance" for pay-TV in Germany. Prospects for growth in this market are now better than they were before.

Whilst the former dispute between Bertelsmann and Kirch Group about the direction of pay-TV in Germany seems to belong to the past, the competition in the free-TV market will remain, at least in the near future. Bertelsmann AG and Kirch Group also reign the analogue commercial TV market. Bertelsmann partly owns RTL, RTL2, SuperRTL, and Vox, while Kirch Group holds shares in SAT1, DSF, ProSieben, and Kabel 1. In sum, these TV companies have an audience market share of more than 50% and skim off about 85% of the total German TV advertising market.

Another important development that impacts on the digital TV market is still in progress: Deutsche Telekom has to sell its cable TV network.

The Bertelsmann-Kirch-deal

The merger of Premiere and DF1 has a record dating back to earlier attempts to unite the digital ventures of Bertelsmann and Kirch Group in 1998.³⁹

In February 1999, Bertelsmann decided to concentrate on Internet business and online services and to reduce its activities in the pay-TV market. The Bertelsmann subsidiary CLT/Ufa sold its 37.5% share of Premiere (except for a rest of 5%) under the condition to carry on its delivery of movies and sports events to Premiere. In March 1999, Kirch Group bought Bertelsmann's share (except for the 5%), after it had already bought the 37.5% share of Canal Plus. Kirch Group owns 95% of Premiere since.

A prerequisite for Kirch Group to perform this deal was to bring in partners supplying the capital needed for the take-over. In March 1999, Silvio Berlusconi and the Arabian sheikh Al

³⁹ On May 27th, 1998 the EC cartel office had decided unanimously to forbid the request of Kirch Group and Bertelsmann to unite Premiere Digital and DF1, and jointly run the digital service under the name Premiere Digital. Simultaneously, the cartel office refused to give consent to the restructuring of Beta Research's ownership, the hardware developing company that built the d-box. The European Commission denied the request of Kirch, Bertelsmann and Deutsche Telekom to form an alliance by each holding 1/3 of the shares in Beta Research. Shortly after the EC decision, Bertelsmann and Kirch Group renewed their plans to co-operate in a common digital television initiative. The two companies intended to each take over 50% ownership in Premiere Media GmbH by buying shares from the third shareholder, the French commercial broadcaster CANAL+. The cartel office in Berlin objected to the application on October 6th, 1998 with the argument that the applicants would not only control the pay-TV but also the free-TV market, especially with regard to ownership of content rights.

Waleed each bought 3.19% of Kirch Media for about 380 million Euro (together). In addition, Berlusconi purchased 15 % of Sat1 for 190 million Euro.⁴⁰

Kirch Group paid about 800 million Euro to CLT-UFA (Bertelsmann) for the shares of Premiere. Immediately after the transaction, Kirch declared his intention to merge Premiere and DF1 in September 1999 and to start a common digital platform. Kirch Group expects start-up costs of another 870 million Euro. The projected break-even-point is 2002. The new digital package(s) will be offered at a monthly subscription fee of about 10 to 15 Euro, since the current DF1-package (20 Euro) is considered to be too expensive. Kirch Group expects to attract 6.4 million subscribers by 2008, i.e. one out of five German households.⁴¹

In June 1999, first outlines of the new programme became visible. The name will probably be "Premiere World". The service is expected to consist of about 20 channels which will be bundled into a family package (10 channels), a movie package (7 channels) and a sports package.⁴²

With Bertelsmann's withdrawal from Premiere, Kirch Group will play a predominant role on the German pay TV market. The German cartel office has agreed to Kirch Group's take-over of Premiere in April 1999. The cartel office states that Kirch Group, although it would achieve a quasi-monopoly in the pay-TV market, would face strong competition from free-to-air TV with Bertelsmann playing the major role in advertising financed television.

Planned sale of the cable TV net of Deutsche Telekom

Deutsche Telekom considers selling parts of its cable TV net or even the whole network. The first step to prepare this move was to separate the cable unit. In January 1999, Deutsche Telekom established the **Kabel Deutschland GmbH**, a 100% subsidiary owning the whole cable TV net of the Telekom.

In the balance sheet of Deutsche Telekom, the value of the cable TV network is calculated at about 4 billion Euro. A buyer would also have to invest about 2.5 billion Euro to upgrade the net and to provide the basis for a back-channel allowing interactive services.

Telekom is now following the strategy to divide its cable network into nine regional divisions and then to sell these divisions locally. This is regarded as a strategic move in order to minimise national competition for telephone or online services (such as provided by Telekom subsidiary T-Online).

Recently, the Deutsche Bank, Bertelsmann, Microsoft and US cable Internet group @Home started to negotiate with Deutsche Telekom regarding the sale of the cable TV network.

⁴⁰ cf. Süddeutsche Zeitung, March 22nd, 1999

⁴¹ cf. Süddeutsche Zeitung, March 26th and March 31st, 1999; Die Welt, March 27th 1999

⁴² cf. Salzburger Nachrichten, June 9th, 1999.

- ✓ The **Deutsche Bank** was first to make a bid⁴³, but the offer (estimated at between 2.5 to 4.6 billion Euro) was rejected by Deutsche Telekom.
- ✓ **Microsoft**: The German press reports rumours that Microsoft plans to enter the Deutsche Telekom with the intention to establish Windows CE, a special operating system of Microsoft for small applications, as a new standard for set-top-boxes in order to make TV sets fit for Internet applications.⁴⁴
- ✓ **Bertelsmann**: In June 1999, Bertelsmann announced its intention to offer multimedia-services via cable networks, e.g. e-commerce services, conventional free-TV combined with (near-)video-on-demand via pay-per-view as well as its online-service AOL. Technical trials are planned to start in July 1999. Bertelsmann is interested in owning at least parts of the cable network, which is considered a strategic move to prevent a by impediment to the technical upgrade (return channel) of German cable networks.⁴⁵

Telekom has launched an official call to make a bid for its cable net. Bids can be made until August 13th, 1999 and have to be for shares of at least 10% and no more than 75% of the network. Investment bank NM Rothschild & Sons has been contracted to process the deal.

1.3.2 Co-operations and agreements between operators

In the cable market, the Deutsche Telekom only feeds pay-TV-programmes with the CA-system from Irdeto (as used in Kirch's d-box) into its cable net. This decision is based on a strategic agreement between **Kirch Group, Bertelsmann and Deutsche Telekom** to work only with the d-box as decoder technology. A new pay-TV-provider would therefore have to use the d-box technology if he wants his programmes to be fed into the cable network of the Telekom, unless the German regulation authorities were to insist that other boxes be allowed on the network.

Deutsche Telekom is reported to enter a deal with Kirch Group with regard to its online service **T-Online**. Kirch Group would deliver content for *T-Online*. This would be a strategic move to compete with Bertelsmann's Online-service America Online (AOL). DT also considers providing T-Online via its cable TV net and using the d-box.⁴⁶

In order to promote open access to digital platforms, a number of players from different sectors founded **FUN - the "Free Universe Network"**. FUN was initiated by ARD, IRT (the Institute for Broadcasting Technology of the German public broadcasters), the media companies Thyssen Multimedia GmbH/Mediagate GmbH, some consumer products manufacturers like Galaxis, Sagem, Echostar, TechniSat and further media and technology companies in February 1999. The main aim of the alliance is to open the market to all

⁴³ At the end of May 1999, Deutsche Bank Investor, a share holding subsidiary of Deutsche Bank, bought 100% of the cable net provider Telecolumbus. Telecolumbus was previously owned by the energy supply companies VEBA and RWE via their common telecommunication subsidiary Otelo, at a price of about 740 million Euro. Telecolumbus has got about 1,7 million customers. It is the second biggest German cable net provider after Deutsche Telekom.⁴³ If Deutsche Bank also bought large parts of the Telekom cable net, it would have access to the majority of all German cable net subscribers.

⁴⁴ Associated Press News Service, May 21st, 1999. screendigest, June 1999.

⁴⁵ cf. Reuters, June 10th, 1999.

⁴⁶ cf. Der Spiegel, February 1st, 1999.

suppliers of TV, radio and multimedia equipment by defining reliable technical standards allowing the integration of common programming languages like Java. FUN says it is open for any company and institution and has invited Kirch Group, Bertelsmann and Deutsche Telekom to join them. More specifically, the alliance has declared its intention to push the common-interface-technology of the DVB-Group and to actively lobby for open DTV technologies in politics.⁴⁷

Satellite operators are not shareholders in programme companies, neither do they enter strategic co-operations with regard to CA systems. SES and EUTELSAT transmit the programmes delivered by the content providers with the CA-system of the specific content provider. They do not limit themselves to a single CA-system.

1.3.3 Vertical integration

On February 1st, 1999, Deutsche Telekom founded **Media Services GmbH** (MSG) as a 100% subsidiary. The business of MSG is to promote and market services of other content providers for the digital cable network of Deutsche Telekom. MSG will handle the subscriber management. (for details see chapter 1.2.2).

⁴⁷ cf. www.fun-tv.de, June 10th, 1999.

1.4 Technical issues

1.4.1 Decoder issues

Technical and market development of the d-box

The German digital decoder market is dominated by the "d-box" decoder, which has a market share of close to 100%. The d-box is a development of BetaResearch, a 100% Kirch Group subsidiary, with the encryption system of Irdeto and, in first generation, built by Nokia.⁴⁸

In 1995, Kirch Group had ordered one million units of the d-box from Nokia. In April 1999, Nokia announced the delivery of the one millionth d-box.⁴⁹ According to Kirch Group, about 800,000 of these units are already being used by households. The rest of the stock is either owned by companies or available for sale at electronic stores, i.e. Kirch Group objects to the rumours of having a problem with a huge stock of ordered set-top-boxes with no market for them.⁵⁰

The second generation of the d-box ("d-box2"), which is currently under construction, will allow for interactivity. It will be equipped with a new API ("betanova") based on the specifications of DVB-Java (capable for HTML-applications) and thus provide an open, non-discriminating platform for all content providers. The "betanova" software developer kit (SDK) for the d-box system software gives C/C++ programmers access to the d-box platform. BetaResearch states that the SDK allows the development of applications (such as EPGs, games etc.) that can be loaded to the decoder via satellite or cable.⁵¹ The conditional access system of d-box2 will be betacrypt, provided by BetaResearch.

There will be 3 versions of d-box2 for cable, satellite and digital terrestrial reception. d-box2 will be based on the MHP standard for digital set-top-boxes. It will be equipped with a 56k modem, allowing access to online services and to the internet. Special navigation guides will be offered for "surfing the web on TV".

⁴⁸ The d-box was the first marketable digital decoder available in Germany. A second decoder was commonly developed by the members of the MMBG (Multimedia Betriebsgesellschaft: Deutsche Telekom, ARD, RTL, CLT-Bertelsmann, ZDF, Canal+) called Mediabox (based on the system Canal+ introduced in France). The Mediabox was used in the pilot scheme of Premiere digital from February to August 1997, afterwards it vanished from the German market.

⁴⁹ cf. Kabel & Satellit, April 6th, 1999.

⁵⁰ Dieter Hahn, Managing Director of Kirch Group, quoted in Süddeutsche Zeitung, 13th January 1999

⁵¹ <http://www.betaresearch.de/product/product.html>

The d-box "monopoly" debate

Since its introduction in 1995, the digital box has been in the limelight several times. The decoder debate revolved around the issues of publishing the API source code and granting licences for the CA system to other hardware manufacturers.

- ✓ Regarding CA, content providers and hardware manufacturers complain that Kirch Group is in a position to deny access to third parties by withholding licences, despite the obligation to license the CA system on "fair, reasonable and non-discriminatory" terms (in accordance with the TV standards directive 95/47).
- ✓ Open API: In January 1999, Kirch Group finally announced to publish the API source code for the d-box.⁵² Meanwhile, the "betanova" API has been developed, and a software developer kit for betanova is available.⁵³
- ✓ Despite the availability of the API software developer kit for the d-box, there is still criticism – mainly by the public service broadcasters - on the interdependence of the API source code and the encryption system IRDETO. They argue that the API source code of the d-box is so closely intertwined to the IRDETO encryption system that services programmed with this API code cannot be used on decoder boxes not operating with IRDETO.
- ✓ BetaResearch totally disagrees, arguing that criticism had political motives rather being based on facts. Kirch Group underlined its policy of opening the d-box specifications to different hardware manufacturers by having Beta Research granting a third licence for the construction of the d-box to the French producer Sagem (after Nokia and Philips) in April 1999. Other manufacturers, however, still feel discriminated against. The German manufacturer TechniSat was taking Beta Research to court because of the repeated Beta Research refusal to issue a license to them.

The public service broadcasters ARD and ZDF are following different strategies in their approach to the dominance of the d-box.

- ✓ ZDF is trying to negotiate a deal with Kirch Group for the use of the d-box. ZDF is not really satisfied with the d-box technology, but it does not want to risk giving up the Premiere and DF1 subscribers as potential audience for its own (future) digital services.⁵⁴
- ✓ In the meantime, ARD is still fighting the "d-box monopoly" vehemently and is a main player in the initiative "Free Universe Network (FUN)".⁵⁵

Encryption plans of the Deutsche Telekom

Another debate on conditional access and encryption may start in the near future. Deutsche Telekom considers encrypting every single digital TV programme fed into its cable net, starting in summer 1999. This would also apply to programmes distributed free-to-air via satellite or terrestrial broadcasting. The decoder will be the d-box. This "basic encryption"

⁵² cf. Süddeutsche Zeitung, January 13th, 1999.

⁵³ cf. <<http://www.betaresearch.de/product/betanova-d.html>>

⁵⁴ telephone interview with Mr. Bruno Krüger, Technisches Büro des ZDF, June 8th, 1999.

⁵⁵ for details of FUN see «Vertical integration».

would bind all customers of the Telekom to the d-box technology, and free-to-air-decoders could not be used in the cable net any more. An open question is if all cable subscribers would then have to pay an additional fee automatically.

Telekom states that the reason for this measure is to establish a standard decoder technology in Germany, with all decoders being equipped with the same CA-system, in order to pave the way for pay-TV.⁵⁶ Pros and cons of "basic encryption" of services in the digital cable is a political issue. For instance, it can be argued that encryption of the digital packages of ARD and ZDF, causing additional costs for the audience, collides with the guidelines for public service broadcasting.

Opponents of basic encryption argue that Deutsche Telekom simply follows a strategy to set up a new business this way in order to reduce the deficit of its cable network. In 1997 the Deutsche Telekom cable net balanced with a loss of about 660 million Euro. In 1998, the deficit was about 410 million Euro, in spite of an increase of fees for basic cable subscription of about 15 % at the end of 1997.⁵⁷

Other decoders & related initiatives

Whilst the d-box has a quasi monopoly in the market, other decoders have been presented that could potentially compete with the d-box. At CebitHome 1998, hardware manufacturers Galaxis, Panasonic and Sagem introduced **new DVB-MPEG2 decoders with a licensable, "open" API**. Some of these free-to-air-decoders contain free slots (Common Interface) for the optional use of different CA-modules.

The public service broadcasters and the FUN initiative favour the **OpenTV API**. The specifications for the API source code of OpenTV have been available for third party licensing from the beginning, but not for free. OpenTV states that it grants licences to anybody who is interested, in contrast to Beta Research which would grant licences only to some companies preferred by Kirch Group. ZDF estimates that there are about 15,000 to 20,000 free-to-air-decoders in the German market (June 1999), mainly based on OpenTV-technology.⁵⁸

Development of EPGs

The EPG offered by DF1 on d-box is T.O.N.I., the "Tele Online Navigation Instrument". T.O.N.I. offers a menu of all digital programme providers and their channels. T.O.N.I. will be replaced by a new EPG when Premiere World will be introduced in October 1999.

Addressing the issue of a non-discriminating presentation of programmes, the public service broadcasters ARD, ZDF and ORF have commonly developed an EPG for digital TV that

⁵⁶ cf. interview with MSG on June 17th, 1999.

⁵⁷ cf. InfoSat, 3/1999, pp. 11 and 143.

⁵⁸ estimate provided by ZDF.

offers an easy-to-use bookmarking and pre-programming function based on OpenTV. The EPG of the public service broadcasters cannot be used on d-box, but ZDF is testing solutions on how to adapt its EPG for use on the first generation of d-box.

Overview: Decoders in the German TV market (August 1999)

<i>Operator</i>	<i>CA technology</i>	<i>Interactive services technology</i>	<i>Free to air compatibility</i>	<i>16:9 compatibility</i>	<i>Integrated modem</i>
DF1	Beta/Irdeto ⁵⁹	In development	yes	yes	yes
Premiere	Beta/Irdeto	In development	yes	yes	yes
Premiere World *	Betacrypt **	yes	yes	yes	yes
T-medianet (Telekom)	Beta/Irdeto	In development	yes	yes	yes
ARD	None	OpenTV	yes	yes	yes
ZDF	None	OpenTV	yes	yes	yes

* expected for October 1999

** CA system of second generation d-box

1.4.2 Widescreen (16:9)

About 10% of TV households in Germany own a 16:9 television set. The percentage is expected to rise over the next couple of years, since prices for 16:9 TV sets continue to decrease.

The percentage of 16:9 sets mirrors the percentage of programmes in 16:9 format. ZDF reports that it broadcasts 8 to 10% of its programme in 16:9. For ARD and commercial broadcasters as well as DF1 and Premiere, broadcasting in 16:9 accounts for about the same rate. There is no indicator that 16:9 is an incentive for consumers to switch to digital television.

<i>TV station</i>	<i>Percentage of its programme in 16:9 (both analogue PAL+ and digital)</i>
ARD	Up to 30 % (with big differences between the various regional programmes of ARD)
DF1	0 %
Premiere	About 20 %
ZDF	About 8 – 10 %

⁵⁹ Irdeto supplies the conditional access technology for the d-box decoder developed and licensed by Beta Research, a Kirch Group subsidiary.

1.4.3 Portable & mobile reception

Portable reception is an issue in media politics within the deployment debate of DTTV and in field trials.

2+ TV set homes and TV equipment for vacation homes are arguments for the introduction of DTTV, since they may depend on terrestrial reception, at least before MHP will be the established standard, introducing home networking possibilities.

Trials are testing mobile reception along highways or railways and portable reception with small aerials. At this point, there are mainly prototypes of receivers for digital terrestrial TV (DVB-T) in the German market and a number of DVB-T boxes from the UK.

Portable and mobile reception are considered as major advantages of terrestrial broadcasting in relation to satellite and cable television which may justify the technical effort of switching from analogue to digital terrestrial broadcasting.

1.5 Conclusions

Access to cable networks is the key for market building

Looking back on the record of digital TV in Germany since 1996, access to cable networks has proven to be a key success factor for digital services providers, especially in the early stages of market take-up. This assumption is confirmed by the development of DF1: About 60% of the new subscriptions have been cable subscriptions (40% satellite) since Deutsche Telekom opened its network for DF1 in November 1997.⁶⁰

Since direct access to customers is a key asset in the market, cable operators want to play a service provider role rather than a pure carrier one. Examples in this domain are the initial struggle between DF 1 and Deutsche Telekom and DT's founding of MSG.

Competition between digital (pay) and analogue (free) TV markets

Considering the number of players, digital TV's most threatening competitors do not come from within the digital ranks, but from the analogue market. Due to the wealth of programmes available on analogue free-TV (either via satellite or via subscription to a cable TV network), consumers are hesitating to subscribe to premium digital pay-TV services. However, only a few of the private commercial channels are making profits, and a lot of experts expect that a number of these free-to-air programmes will not be continued for long. The question is if there will be a market driven shift from the free-to-air philosophy (advertising financed) to a pay-TV philosophy in Germany.

Consumer uncertainty about decoder situation

After the struggles around decoders and the debates about "open standards", consumers are uncertain about the decoder situation. Currently, a digital decoder costs around 500 Euro. Consumers seem to hesitate with purchasing decoders now; firstly, because prices may significantly decrease in the near future, and secondly, because they fear that they need to purchase different decoders for each service they might want to subscribe to. Some experts argue that decoder hardware is overpriced. They say that costs could be reduced considerably (down to 150 Euro) by utilising standard technology as used e.g. in decoders with the French CA-system Viaccess. These decoders cost about 150 – 200 Euro, because the technical specifications for Viaccess are open and licenses for the construction of Viaccess CA-modules have been given to many different hardware producers.

⁶⁰ DF1 press release, 1st October 1998

High concentration in the digital pay TV market

After the merger of DF1 and Premiere into one service (probably in October 1999), the digital pay-TV market in Germany will be highly concentrated. The second potential player that has the financial stamina to run a new digital pay-TV initiative, Deutsche Telekom, just started to negotiate with potential content providers, but will not be able to fill the gap of a viable competitor any time soon.

This leaves only Rupert Murdoch who bought 66% of tm3 and has already declared his intention to launch a digital pay-TV package beside the free-TV-offer of tm3 in the long run. In May 1999, Murdoch bought the licence for broadcasting the champions league in Germany in free- as well as in pay-TV. Murdoch may sell the licence for pay-TV to DF1/Premiere or use it as a core content to launch a digital pay-TV package of his own.

Interactive services will not play an important role in the short and medium term.

Digital services are mainly conventional television programmes. The value added is primarily an increase in quantity, offering more choice. Interactive services do not play an important role in the market. There are pay-per-view offers based on near-video-on-demand, but DF1 and Premiere state that revenues from pay-per-view are insignificant.

2 Key figures for the German market

2.1 Country fundamentals

	1993	1994	1995	1996	1997	1998	1999
Population (millions)		81,539	81,818	82,012	82,057	82,030	
Households (millions)		36,812	36,938	37,281	37,454	37,532	
GDP (in Euros billions)		1747,310	1779,300	1833,900	1879,410	1942,600	

2.2 Equipment

<i>As of 31 of December</i>	1993	1994	1995	1996	1997	1998	1999
TV households (millions)		35,158	35,615	35,862	36,334	36,500	
<i>TV households (% of total households)</i>		95,5%	96,4%	96,2%	97,0%	97,3%	-
TV Households with 2 TV sets or more (millions)		9,900	11,041	12,193	13,262	14,313	
<i>TV Households with 2 TV sets or more (% of TV Households)</i>		28,2%	31,0%	34,0%	36,5%	39,2%	-
TV Households with 16:9 Television sets (millions)		0,000	0,000	2,100	3,400	3,650	
<i>TV Households with 16:9 Television sets (% of TV Households)</i>		0,0%	0,0%	5,9%	9,4%	10,0%	-
VCR Households (millions)		18,500	21,100	22,050	22,700	23,350	
<i>VCR Households (% of TV households)</i>		52,6%	59,2%	61,5%	62,5%	64,0%	-
Digital STB Households (millions)		0,000	0,000	0,015	0,220	0,662	
<i>Digital STB Households (% of TV Households)</i>		0,0%	0,0%	0,0%	0,6%	1,8%	-
IDTV Households (millions)		0	0	0	0	0	
<i>Digital TV Households (% of TV households)</i>		-2,8%	-2,8%	-2,8%	-2,8%	-2,7%	-
Digital Households (millions)		0,000	0,000	0,015	0,220	0,662	
<i>Digital Households (% of TV households)</i>		0,0%	0,0%	0,0%	0,6%	1,8%	-

2.3 Access to DTV

Cable

	1993	1994	1995	1996	1997	1998	1999
Home passed (millions)	28,190	30,338	31,386	32,200	32,200	32,600	
of which digital (millions)	0,000	0,000	0,000	0,500	17,900		
<i>Home passed (% of TV households)</i>	0,0%	0,0%	0,0%	1,4%	49,0%	-	
<i>cable homes with digital capability (% of TV households)</i>	0,0%	0,0%	0,0%	1,4%	49,0%	-	
Analogue Basic Subscribers (millions)	15,782	17,080	18,020	18,750	19,200		
Digital package subscribers (millions)	0,000	0,000	0,000	0,108	0,410		
<i>Analogue Basic Subscribers (% of TV households)</i>	44,9%	48,0%	50,2%	51,6%	52,6%	-	
<i>Digital package subscribers (% of TV households)</i>	0,0%	0,0%	0,0%	0,3%	1,1%	-	

Satellite

	1993	1994	1995	1996	1997	1998	1999
Satellite households (millions)	8,320	9,530	10,000	10,700	11,370		
<i>Satellite households (% of TV households)</i>	23,7%	26,8%	27,9%	29,4%	31,2%	-	
Satellite subscribers (millions)	0,215	0,253	0,401	0,495	0,495		
<i>Satellite subscribers (% of TV households)</i>	0,6%	0,7%	1,1%	1,4%	1,4%	-	
of which digital (millions)	0,000	0,000	0,015	0,112	0,252		
<i>of which digital (% of TV households)</i>	0,0%	0,0%	0,0%	0,3%	0,7%	-	

Terrestrial TV

	1993	1994	1995	1996	1997	1998	1999
Analogue Pay-TV services							
Pay-TV subscribers (millions)	0,000	0,000	0,000	0,000	0,000	0,000	
<i>Pay-TV subscribers (% of TV households)</i>	0,0%	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	0,000	
<i>Homes covered (% of TV households)</i>	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	-
IDTV households (millions)	0,000	0,000	0,000	0,000	0,000	0,000	
<i>IDTV households (% of TV households)</i>	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	-
Pay-TV households (millions)	0,000	0,000	0,000	0,000	0,000	0,000	
<i>Pay-TV households (% of TV households)</i>	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	-

2.4 Television market estimates*

<i>Millions Euros</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>
Analogue TV Market							
Public funding	2898,578	2987,672	3059,719	3486,846	3523,600		
Advertising	2955,750	3367,602	3703,689	3763,628	3950,000		
Subscriptions	1585,979	1736,750	1990,983	2364,668	2408,009		
Total analogue TV	7440,307	8092,024	8754,391	9615,142	9881,609		
Digital TV Market							
Public funding	0,000	0,000	0,000	0,000	0,000	0,000	
Advertising	0,000	0,000	0,000	0,000	0,000	0,000	
Subscriptions	0,000	0,000	2,646	41,454	155,497		
Total digital TV	0,000	0,000	2,646	41,454	155,497		
TV Market							
Public funding	2898,578	2987,672	3059,719	3486,846	3523,600		
Advertising	2955,750	3367,602	3703,689	3763,628	3950,000		
Subscriptions	1585,979	1736,750	1993,629	2406,122	2563,506		
Total TV market.	7440,307	8092,024	8757,037	9656,596	100037,106		

* **"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.