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Development of Digital TV in Europe

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1 Digital TV market overview

Recent developments of the Austrian digital TV market (1999) have been in line with the German development of digital TV. Premiere Digital and DF1 are the dominant service providers and offer the only digital pay-TV services available. The merger of Premiere and DF1 and its resulting new service will probably be simultaneously introduced in Austria in October 1999. The deployment of digital terrestrial TV remains unclear.

The Austrian digital TV record since 1997 should be considered against the general situation of television in Austria, i.e.

- ✓ the changing regulatory framework and the late liberalisation of the TV market,
- ✓ and the strong overspill of German TV programmes in Austria.

Liberalisation of the Austrian television market began in 1997 and is limited to the provision of services via cable and satellite. Terrestrial broadcasting in Austria is based on the 1974 Constitutional Broadcasting Act (BVG-Rundfunk) and is practically a public service monopoly. The political debate about liberalisation of terrestrial TV has not yet resulted in a new law. The Constitutional Broadcasting Act stipulates the independence of the Austrian Broadcasting Corporation (ORF) and lays down the obligation for broadcasting as a public responsibility to be enforced by the Austrian government.[1]

Legal framework: First steps towards competition in the Austrian TV market - liberalisation of cable TV

The end of the broadcasting monopoly was enforced by a ruling of the Constitutional Court in 1995, resulting from complaints of permit holders for cable TV networks who appealed to the Constitutional Court. They considered as unconstitutional the restriction prohibiting them to feed their own programmes (i.e. their own productions, reports and videos) into their cable TV networks. According to the prevailing legal position, all owners of aerial systems, with the exception of ORF, are not entitled to actively produce and broadcast programmes. In a ruling of September 27th, 1995, the Constitutional Court refers to Art. 10 EHRC and demanded that cable TV network providers should be entitled to provide TV services independently. A second ruling by the Constitutional Court of October 8th, 1996, deemed the de facto advertising ban for cable broadcasters was unconstitutional.

[1] cf. ESIS - European Survey of Information Society Projects: Regulation Developments Report by WIFO and Techno-Z FH F&E, submitted to ISPO - Information Society Project Office of the European Commission, July 1998

The Government reacted and adopted the Cable and Satellite Broadcasting Act[2] (KSRG, March 20th, 1997) to provide a legal foundation following the Court's rulings. The organisation of television by wireless terrestrial means, however, continues to be regulated by the Federal Broadcasting Act (RFG), due to the scarcity in transmission capacity.

Austria - a market for German TV service providers

Overspill of German TV programmes continues to play an important role in Austria, but to an even greater degree in the digital TV market than in the analogue free-to-air TV market.

Although ORF has enjoyed a long-term monopoly from a supply side perspective, they have faced increasing competition from extensive overspill of German TV programmes in Austria. The roll-out of commercial TV in Germany, which began in 1984, along with the penetration of cable networks and private satellite dishes is also happening in Austria. Approximately two thirds of all Austrian cable and satellite TV households can receive most of the German free TV programmes and major channels. These programmes compete against ORF for audience shares, and – increasingly – for advertising budgets. ORF’s audience market share has decreased from 77% in 1991 to 61% in 1998 (annual average). In multi-channel households (HH with access to cable TV and/or satellite dish), ORF has a market share of about 50% (1998). There are no figures available on overspill of advertising investments, but the share of foreign channels is much lower than in the audience market.

The emerging pay-TV market and the first steps towards digital television in Austria are also dominated by German players. Premiere and DF1 have offices in Austria and market the same services to German and Austrian households.

The only domestic players in the emerging digital pay-TV markets are large cable TV operators like Vienna based *Telekabel*, launching pay-TV services (recently only via analogue transmission) and interactive services such as Internet access or telephone services.

[2] According to the KSRG, everyone will have the right to provide active cable and satellite broadcasting as long as the programme meets certain minimum requirements. Cable broadcasters will only have to register their business instead of having it licensed by a commission. Only satellite programmes need a licence, but even then the applicant does not have to go through a selection process.

1.1 Roll-out of digital services

Due to the lack of commercial Austrian TV service providers, the development of digital TV is dominated by ORF on the one hand, and the market entry of German digital service providers on the other. The small size of the overall Austrian market (about 3 million TV households in total) combined with the massive overspill of German analogue free TV programmes is a difficult environment for potential entrants.

- ✓ The German digital service providers DF1 and Premiere Digital offer their services in Austria. The number of subscribers is proportionally smaller than the German figure and amounts to about 35,000 (May 1999).
- ✓ The digital strategy of public service broadcaster ORF is to digitise the transmission of its existing programmes via satellite[3] and to enter new (interactive) markets in other areas than television, for example as Internet access provider.[4]
- ✓ The larger Austrian cable TV networks (e.g. Telekabel Austria) offer pay-TV and interactive services, e.g. Internet access services based on analogue cable as well as telecommunication services. Digitisation of cable networks is starting now.

1.1.1 Satellite digital services

Austria has one of the highest penetration rates of private satellite dishes (39% of TV households) in Europe. This is mainly due to the ORF monopoly for terrestrial (analogue) television and the peculiar topology of the country. Household penetration has increased from 2% in 1990 to 39% at the end of 1998, already surpassing cable TV penetration. As a result, reception via satellite is considered to play an important role in the future roll-out of new digital services, although the majority of Austrian satellite households have yet to switch to digital reception mode. It is expected that digital receivers will gradually penetrate the market, depending on the roll-out of digital pay-TV services such as DF1 and Premiere Digital.

- ✓ There are no private Austrian satellite television services available yet. A new programme called Ö-SAT might be (re)launched in summer 1999.[5]
- ✓ Satellite is mainly used as a means to receive additional (free-to-air TV) programmes, predominantly German ones.
- ✓ German providers DF1 and Premiere offer services via satellite. Prices compare well to those in Germany. Austria could be regarded as a sort of “add-on” to the German market.

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[3] cf. interview with Gerhard Zeiler, in: infosat, 5/97, Nr. 110

[4] ORF launched "A-Online", a joint venture with Telekom Austria. A-Online is the largest Austrian Internet access provider. Thus, the biggest infrastructure provider and the biggest content provider co-operate in the ISP market.

[5] On March 2nd, 1998, Ö-SAT, a new digital Austrian TV programme started broadcasting digitally via EUTELSAT II-F3. Ö-SAT is a special interest channel for health, sports and religion located in Vorarlberg. The programme was broadcasted until December 1998, but is currently not on air. The service is scheduled for a relaunch in August 1999.

Roll-out plans of ORF for satellite digital broadcasting

The Austrian public broadcaster ORF is the only genuine player in the digital satellite TV market. No other Austrian content provider has either the financial capacity or the content wealth necessary to justify leasing satellite transponder space. So far, ORF has implemented the following strategy for the roll-out of satellite-based, digital services:

- ✓ In 1997, ORF launched **TW1**[6], the Tourism and Weather Channel. TW1 is a free of charge, digital special interest programme especially targeted at tourists. TW1 is internationally distributed digitally via Astra 1G and on analogue cable networks. In Austria, TW1 is also available through terrestrial analogue TV. TW1 reaches a potential audience of about 3.1 million households all over Europe, including households in Austria, Switzerland, Germany, Luxembourg, Slovenia, and Hungary.[7]
- ✓ Since April 1st, 1998, ORF broadcasts a digital, non-encrypted version of its channel 2 programme (ORF2). Together with TW1, the package can be received in other European countries via satellite and cable as part of the digital package of German public broadcaster ZDF, "ZDF.vision".
- ✓ Since 1998, ORF has focused on creating its own digital package by initiating a partnership with SF1, the German-speaking division of the Swiss public broadcasting corporation.[8] The package comprises TW1 and SF1 (non-encrypted) and the ORF standard programmes ORF1 and ORF2 (encrypted), as well as several radio channels. It is broadcast via Astra 1G.
- ✓ Despite its announcement to broadcast ORF1 and ORF2 encrypted as a regular service by the end of 1999, ORF has not decided on a specific encryption system and smart cards in order to fulfil its long-term plans.

ORF's "business model" for encrypted satellite digital TV services builds on the existing public service system. All Austrian households paying the (mandatory) broadcasting licence fee will be entitled to receive a smart card for their digital decoder to decode ORF's encrypted digital satellite broadcasts.

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[6] TW1 (tourism and weather channel) is a special interest programme which was set up as a joint venture of ORF (50%) and Sitour Group (50%) in December 1997.

[7] cf. www.tw1.at

[8] Partner SF1 sub-leased satellite transponder space from ORF, and now transmits an encrypted programme, using Viaccess as encryption system.

Roll out of digital satellite broadcasting (ORF)

Time	*Offer*
December 1997	Launch of TW1 (tourism and weather channel). TW1 is available as non-encrypted digital programme, free of charge via digital satellite ASTRA 1G.
January 1998	Launch of ORF digital teletext.
April 1998	Launch of digital radio broadcasts via satellite: Ö1, Ö3, Blue Danube Radio and FM 4.
April 1998	A non-encrypted combination of ORF2 and TW1 becomes part of the digital package of German ZDF.
June 1998	All of the 9 regional radio programmes (Ö2) and Radio Österreich International are part of the digital ORF-package.
Fall 1998	ORF1 and ORF2 as encrypted programmes via ASTRA 1G (field trial).
End 1999	Decision on STB-standard (CA, API) and encrypted transmission of ORF1 and ORF2 as regular service. All of ORF's nine regional TV-programmes should be available in all parts of Austria via ASTRA 1G in encrypted form.

1.1.2 Cable digital services

Cable TV penetration

About 1.2 million homes in Austria subscribe to a cable TV network (end of 1998). In contrast to Germany, where Deutsche Telekom operates a nation-wide network, Austrian cable TV network providers tend to operate on a regional or local basis. Thus, the Austrian cable TV market is highly fragmented. There are more than 300 networks, but only about 100 of these have more than 500 subscribers.

The degree of digitisation of the cable networks depends on the market strategies of individual network operators. Small networks do not have much incentive to invest into the digitisation of networks, since the limited number of subscribers does not justify the investment. It remains to be seen how far digital TV services such as Premiere Digital can be the vehicle for digitisation. Further pressure could then derive from the satellite TV market.

Cable digital services

At present, **DF1** and **Premiere Digital** are the only two services in Austria that distribute their programming via digital cable. DF1 feeds its digital service package into 17 small Austrian cable networks, while Premiere Digital is distributed by 172 cable providers, including some of the larger cable TV operators such as Telesystem Tirol Kabelfernsehen, Kabelsignal, Burgenländisches Kabelfernsehen, and Karl Lampert KG.

However, the two German-based digital content providers have failed to gain access to **Telekabel** yet, Austria's largest cable TV provider and the most viable competitor in the cable digital TV market (August 1999).[9] Although Telekabel still operates mostly an analogue service, gaining access to the network would have been an important strategic success to ensure a rapid spread of digital TV services in the future.

As a result, only 2,300 Austrian cable households have subscribed to Premiere Digital and about 800 cable households to DF1 (May 1999).

Projects in progress

With 450,000 subscribers, Vienna-based **Telekabel** is among the top-15 European cable TV network operators and the largest cable TV service provider in Austria. Although Telekabel still offers mostly analogue TV services, it is very likely that it will play an important role in the digital TV market, as digitisation of its proprietary cable TV network progresses.

Telekabel already has detailed plans for going digital. From a technical point of view, about 75% of the Telekabel fibre optic network can already be used for interactive services (return channel), the missing 25% to be upgraded within the next 1-3 years.[10] By mid 2000, the pay-TV service ***Telekino,*** which is currently operated as an analogue pay-TV service for a potential audience of 400,000 customers in the Vienna area, will go digital.

Besides ***Telekino***, Telekabel operates two additional cable-based services:

- ✓ ***Teleweb*** is the Internet access service offered by Telekabel (about 17,000 subscribers at the end of May 1999)
- ✓ ***Priority Telekom,*** Telekabel's cable-TV-based telephone service (about 5000 customers since its launch in 1999).

While other Austrian cable operators such as Kabelsignal in Lower Austria, Liwest in Upper Austria, SAFE in Salzburg and Radio Lampert/Hirschmann in Vorarlberg also offer Internet access services via cable, Telekabel's telephone service is still unique.

The only Austrian-made digital satellite programme, TW1, is fed into Austrian and German analogue cable networks. TW1 reaches about 845,000 households in Austria and 140,000 in Germany via analogue cable. In Germany, TW1 and ORF2 are transmitted digitally into cable networks as part of ZDF's digital package.

ORF contributes individual programmes to other packages, but does not yet feed its own digital service package into any cable network in Austria or Germany.

1.1.3 Situation of MMDS

MMDS is practically not in use in Austria.

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[9] data provided by questionnaires to DF1 and Premiere, June 1999.

[10] cf. interview via telephone with Mr. Fink, Telekabel Vienna, on June 2nd, 1999.

1.1.4 Situation of terrestrial digital television

ORF first announced plans for the transition from analogue to digital terrestrial television in 1999, but these plans remain quite vague. There are several reasons why DTT has yet to take off in Austria.

Political blockade

In contrast to Germany, where a decision was taken to terminate analogue terrestrial TV by 2010, there are no plans for a similar transition in Austria, neither by the Austrian government or ORF. Lately, however, digital terrestrial television has become a political issue as regards the liberalisation of terrestrial television. The coalition Government is considering the liberalisation of the existing broadcasting law, which constitutes the basis for the existing monopoly of the public service broadcaster ORF for terrestrial TV frequencies.

The geographical topology of the country only allows for the allocation of three terrestrial, nationwide television frequencies, two of which are used by ORF. The current political debate revolves around the objective to grant a licence for the third terrestrial frequency to a private operator. However, the two Government parties cannot agree on a timeframe and the accompanying measures under which a third licence should be granted. The Conservative Party (ÖVP) claims that it is senseless to issue a third analogue licence as the start of digital television is imminent. The Social Democrats meanwhile, argue that granting a third analogue licence would stimulate competition and encourage a speedy transition towards the digital television age.

Shortage of frequencies

A major obstacle to this timely transition could be the shortage of frequencies which prevents a "soft change", i.e. the simultaneous operation of analogue and digital terrestrial TV during the transition phase. This shortage of frequencies causes problems in many European countries, but the problem is aggravated in Austria by the country's topology that allows only three nation-wide analogue terrestrial programmes. A "radical switch" (switching to digital transmission in one single step), however, is not considered a viable solution.[11] ORF is against plans to provide an analogue terrestrial frequency to another service provider, claiming that it needs the frequencies for the switch to DTT in the long run.

ORF intends to discontinue analogue transmission simultaneously with Germany, provided that the majority of Austrian TV households possesses a digital receiver at that time.

Missing trials with DTT

ORF is not currently engaged in any pilot testing digital terrestrial television technology – further proof of the vagueness of Austria's transition plans. Although ORF plans internal

[11] Interview with Peter Moosmann, Technical Director of ORF, in: Die Presse, 23rd Oct. 1998, p. 29. This is a different approach to digitisation of terrestrial TV than in Germany, where a sequence of "radical" switches (region by region) is being considered as a probable scenario.

trials with DVB-T, no actions for pilot projects with digital terrestrial broadcasting with ORF participation or under ORF leadership have been taken.

1.1.5 Market development

The digital television market in Austria (pay-TV and/or interactive services) is still very small. Although the number of subscribers is steadily growing, the total market volume is small in comparison with the rest of Europe and will probably remain so for the next 2-3 years.

The digital offer currently available to Austrian TV households consists of the pay-TV offers of DF1 and Premiere Digital as well as digital packages from the Austrian and German public service broadcasters.

On the issue of market share, the two German digital service providers DF1 and Premiere Digital clearly dominate the market. In May 1999, the two services combined had about 35,000 households subscribing to digital pay-TV services. That is about 25% of the entire pay-TV market (approx. 125,000 subscribers). In the analogue pay-TV segment, Premiere Österreich has the majority share with 70,000 subscribers, followed by Telekabel's *Telekino*, with 20,000 subscribers in Vienna.

Overview: digital services available in Austria

Name of service	*Ownership*	*Date of launch*	*Number of subscribers/viewers*
DF1	100% Kirch Group	Sept. 18th, 1996	23,500 (May 1999)
Premiere Digital	95% Kirch Group, 5% CLT/Ufa	June 25th, 1998	11,300 (May 1999)
ORF-Digital-Package	100% ORF (except TW1: 50% ORF and 50% Sitour-Group, and SF1: 100% Swiss Public Broadcasting Corporation)	TW1: December 1997, other programmes in April 1998 (ORF1 and ORF2 still as field trial)	unknown
ARD-Digital-Package	100% ARD	August 1997 (IFA, Berlin)	unknown
ZDF.vision	100% ZDF	August 1997 (at the International Broadcasting Fair)	unknown

There is no data available on the consumer profiles of ORF's digital TV offerings.

Market growth

The total market for digital (pay-)TV in Austria was about 7 million Euro in 1998.[12] This is less than 1% of the entire annual TV market (advertising revenues + licence fees + subscription revenues) and a third of the total (premium) pay-TV market.

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

	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	754	144	16	0	0,0	0,3
1997	822	163	20	3	0,3	1,6
1998	878	171	21	7	0,8	4,3

* including fees cable households are paying for basic subscription to cable network operators; additional fees have to be paid for premium services (e.g. Premiere analogue), which are only a small percentage of the total pay-TV market

The most important growth in the digital TV market within the next 2 years is expected to result from pay-TV provider Premiere's turn from analogue to digital transmission and the merged digital pay-TV package of Premiere and DF1, which is scheduled to begin in Austria in October 1999.

1.1.6 Barriers to competition or market development

Large offer of German free-to-air TV programmes

ORF and the emerging private cable TV content providers are facing competition from the traditionally strong overspill of German TV programmes in Austria. The large amount of free-TV programmes that are received in 78% of all households makes it difficult for new entrants to offer programming with real added value.

Likewise, if the envisaged liberalisation of terrestrial TV takes off in the near future, the market for digital pay-TV and commercial analogue terrestrial TV will become even tighter, as they will directly compete with each other in niche markets.

[12] estimate based on the number of digital pay-TV subscribers and the (average) subscription prices plus an (estimated) number of pay-per-view orders

Uncertainty regarding STB-standard

A major obstacle to the market development of digital services is the uncertainty concerning the standard for digital receivers. Consumers hesitate to invest in hardware as it is unclear which services they will be able to technically access. ORF plays a key role in this dilemma. New entrants will not be able to "set the standard" independently of ORF's decision for an encryption system, as well as soft- and hardware requirements for the EPG.

ORF has not decided on any particular encryption system. Until mid 1999, they had ruled out acquiring a licence for the d-box decoder of Beta Research/Irdeto because of the high cost involved.

As a dominant player, ORF has to carefully consider legal aspects in their decision for a decoder system. The European Union Directive 95/47 requires dominant players to grant to third parties access to their CA services on "fair, reasonable and non-discriminatory" terms. This implies cost-oriented charges for CAS in order to reward investment, but is intended to prevent abuse of dominant position, i.e. ORF (as a dominant player) will not be in a position to deny other service providers access to the digital platform they will use. The media department of the Austrian Chancellery has issued a draft for an act in line with the EU directive in June 1998[13], but the act has not been passed in parliament yet (as of 1999). The EU directive should have been translated into the member states' laws by the end of 1996. Due to this delay, Austria risks to be sued by the European Commission.

Transition towards digital terrestrial TV unclear

A political decision as well as detailed plans and time-schedules for a switch to digital television are needed. Paradoxically, digitisation of television has become a political argument against a fast liberalisation of the Austrian television market.

[13] cf. Die Presse, 17th November 1999

1.2 Details of services

1.2.1 Number and type of services

About 72 Austrian and German digital free-to-air and pay-TV-service channels can be received 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-package
4	Channels of the digital ORF-package (3 of which encrypted: ORF1, ORF2 and SF1)
8	Channels of the digital ZDF-package
13	Private free-TV-channels (Bloomberg TV, DSF, Kabel1, NBC/Giga TV, n-tv, ProSieben, RTL, RTL2, SuperRTL, Sat1, VIVA, VIVA ZWEI, VOX)
73	Austrian or German digital channels via satellite (ASTRA + EUTELSAT)

Some of the programmes are national versions of foreign channels:

- ✓ 13th Street (provider: Universal Networks Germany within DF1)
- ✓ BBC Prime (in English language within DF1)
- ✓ Bloomberg TV (simulcast via satellite)
- ✓ Cine Classics I (provider: Multithématiques within DF1)
- ✓ Cine Classics II (provider: Multithématiques within DF1)
- ✓ CNBC (within DF1)
- ✓ 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).

1.2.2 Details of the DTV offers

DF1 and Premiere digital pay-TV packages increase the quantity and quality of the service beyond what is available from analogue free TV services. Customers are paying for either exclusivity of content (e.g. soccer matches not available on free TV, recent movies), or speciality programmes. Most of the additional channels available offer US content. New features of digital services focus on pay-per-view and near video-on-demand.

Offer of 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, and costs 22 Euro. The other packages offered are less comprehensive and cost between 11 and 20 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 more. (6-11 Euro vs. 3-7 Euro if subscription is in addition to a DF1 package).

In addition, subscribers may order individual services via pay-per-view (about 2.5 Euro per movie) which is offered in the 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.[14]

DF1's marketing campaign 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 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 the Disney corporation within DF1/Premiere.[15] Other new programmes will most probably be special interest channels.

Offer of Premiere

Pay-TV provider Premiere is changing evolutionary from analogue to digital transmission and equipping subscribers with digital reception technology.

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.

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[14] cf. DF1-Magazin, 6/1999, p. 43.

[15] cf. Süddeutsche Zeitung, March 4th, 1999.

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 content and a large choice of feature movies in its marketing campaign. The campaign also stresses that the “new digital Premiere” offers more entertainment in digital visual and audio quality - the focus however, is clearly on quality of content (new movie hits, live-events, soccer, documentaries and erotic movies).

Premiere digital services cost the same as the analogue package (about 18 Euro per month), but the rent of the d-box for the digital package amounts to 11 Euro instead of 3.5 Euro for the analogue decoder. A movie ordered by pay-per-view costs 3 Euro.[16]

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

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.

"Premiere world" – the merger of DF1 and Premiere

Following 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 be discontinued.[17]

Digital package of ORF

ORF’s digital package does not offer any content specifically created for digital broadcasting other than its conventional programmes. The package does not include an EPG (for a minimum of interactive use of the digital programmes).

In the first phase of introducing digital television to the Austrian audience, the value added from the ORF digital programming will consist of the ability to receive the regional programming of all nine ORF Bundeslaender studios. Viewers in Vienna, for example, will then be able to watch the news broadcasts from the other eight provinces. At present, however, ORF’s satellite capacity is only sufficient for simultaneously transmitting two regional programmes. This regional programme changes every day from one Austrian province to the next, in alphabetical order.

[16] cf. www.premiere.de, June 10th, 1999.

[17] cf. interview with Premiere on June 14th, 1999.

ORF is currently seeking ways to overcome the shortage of transponder capacity; there are two possibilities :[18]

- ✓ First, ORF renegotiates its contract with the Swiss public broadcaster SRG to re-gain the transponder space leased to SRG. Originally, SRG had rented transponder capacity on ASTRA 1G from ORF to reach a broader audience for its German speaking channel SF1.[19]
- ✓ In case SRG are unwilling to return the rented transponder capacity to ORF, the Austrian public broadcaster intends to obtain additional transponders from ASTRA itself.

"Convergence services"

Convergence is taking place, but at a slow pace. It is unlikely that mass market PC on-line services, which are offering the typical TV services like VoD, will be realised in the near future. Likewise, as consumers do not expect the TV set to be a particularly interactive medium, the PC is said to remain the preferred platform for highly transaction-oriented services like games, e-mail or home shopping in the near future. In any case, interactive services are not expected to take off in the near future, as pay-TV operators will first develop their core business (conventional pay-TV, pay-per-view as near-video-on-demand) before moving into other, more interactive digital ventures. Nevertheless, the public broadcasters, in particular, are experimenting with convergence services:

- ✓ ORF eagerly entered the market of new, PC-based services. Together with Telekom Austria TA, ORF successfully operates its on-line service ORF-ON. The service is one of the most visited sites in Austria.
- ✓ In addition, ORF's digital service TW1 is cooperating with *EUnet Multimedia Network Services (EMNS)* since March 1999 by broadcasting its digital contents via the Internet to further broaden its audience.

Projects planned

Frank Stronach, the Austro-Canadian entrepreneur and CEO of Magna Corporation, plans a (digital) sports and betting channel ("**Sport- und Wettkanal**") in co-operation with ORF. As ORF holds the broadcasting rights for Austrian Football League games until 2004, and as football is clearly the most popular sport in Austria besides skiing, Mr. Stronach had to seek the co-operation of the public broadcaster. This offer is very enticing for ORF as the sports channel would provide the opportunity to further exploit the licenses for programmes readily available. The channel is scheduled to be launched in the year 2000, but as the parties involved have not decided on the transmission mode for this channel. (ORF opts for the less expensive digital solution, while Mr. Stronach prefers analogue transmission in order to reach a broader audience.) A partnership agreement between ORF and Mr. Stronach has yet to materialise. As of June 1999, the chances seem to be in favour of the digital system – providing that the channel will be go ahead at all.

ORF is considering launching additional special interest channels besides TW1 and the sports and betting channel. So far, there are (vague) plans for a digital culture channel.

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[18] Information based on a questionnaire survey done for this study, answered by ORF (June 7th, 1999)

[19] The digital package of SRG is usually transmitted via EUTELSAT, yet, as ASTRA is market leader in the German speaking countries, the contract with ORF was a welcome opportunity for SRG to reach a broader customer base for its German-programmes.

1.3 Operators and market structure

1.3.1 Concentration of the pay-TV market

The slowly emerging Austrian market for digital pay-TV shows signs of high concentration, being dominated by German players. With Bertelsmann's (nearly complete) opting out of Premiere[20], Kirch Group will have a dominant position on the Austrian digital pay-TV market.

1.3.2 Horizontal and vertical integration

Due to the limited number of players in the market, there are only few horizontal / vertical agreements shaping the market structure.

- ✓ ORF co-operates with the largest telecommunications provider, Telekom Austria (TA), in an Internet venture. While ORF functions as primary content supplier, TA provides access services.
- ✓ Vienna-based cable TV operator Telekabel is currently broadening its activities from the television market into the telecommunications market. In 1997, 95% of the company was bought by the US-corporation *United Industry Communications, uic*, which specialises in extending conventional cable broadcasting networks for Internet access and telephone services. Since then, Telekabel actively pursues the (technical) conversion of its cable network and increases marketing efforts for new service packages, including Internet access (*Teleweb*) and telephone services (*Priority Telekom*).

[20] see report for Germany

1.4 Technical issues

1.4.1 Decoders issues

ORF announced that it would follow the development in the German market before deciding on its choice of decoder. The Austrian digital decoder market is dominated by the German *d-box* decoder, a development of Beta Research, a Kirch Group subsidiary. *d-box* was built in first generation by the Finnish hardware manufacturer Nokia. It was introduced in 1995, and was the first and fully functional digital decoder on the German and Austrian market.

However, in 1998, Kirch Group demanded more than 1.5 million Euro per year to make ORF's digital service available through the *d-box* decoder.[21] ORF was not willing to pay this amount. As a result digital satellite broadcasting of ORF1 and ORF2 is still running as a field trial with the Cryptoworks encryption system, which is the cheapest digital CA-system available in Europe, priced at 205,000 Euro.[22]
ORF has not decided on a STB standard for Conditional Access or API as yet, and the smart cards for decryption are not available. They have ruled out a costly simulcrypt solution using two standards, Irdeto and possibly Cryptoworks.

In addressing the issue of a non-discriminating presentation of programmes, however, ORF has joined the German public broadcasters ARD and ZDF in developing an EPG for digital TV that offers an easy-to-use bookmarking and pre-programming function based on OpenTV.[23] However, according to ARD the graphical user interface and the bookmarking function have not yet been converted in order to run them on the *d-box*[24] for reasons that remain rather unclear.[25]

Overview: Use of digital decoders in Austria

Operator	*CA technology*	*Interactive services technology*	*Free to air compatibility*	*16:9 compatibility*	*Integrated modem*
ORF	Cryptoworks (in field trial)		yes	yes	?
DF1	Beta/Irdeto	In development	yes	yes	yes
Premiere	Beta/Irdeto	In development	yes	yes	yes
Premiere World *	Betacrypt **	yes	(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

[21] cf. interview with Peter Moosmann, Technical Director of ORF, in: Die Presse, October 23rd, 1998, p. 29.

[22] Data provided by FUN, June 1999.

[23] OpenTV, the Interactive TV system which is favoured especially by ARD (and FUN), makes its specifications of its API available for third party licensing, but service providers still have to buy a licence to get the technical specifications for the OpenTV API.

[24] First generation d-boxes had a simple navigator called TONI. More recently, Beta Research has developed the BetaNova API, which could run such applications.

[25] Interview with Bruno Krüger, Technical Department of ZDF, 8th June 1999

1.4.2 Widescreen (16:9)

Since 1997, sales of 16:9 TV sets have increased in Austria, although growth rates have not quite reached industry expectations. At the end of 1997, only 1.1% of all Austrian households owned a 16:9 set (34,700 households).[26] It is estimated that this number increased to about 80-100,000 at the end of 1998.

The large consumer electronics retailers report that about 30–50% of big TV sets sold (portable sets not included) are 16:9 sets. A 16:9 receiver with a diagonal width of 70 cm costs approximately 180 – 220 Euro more than a 4:3 set. Sales of 16:9 sets amount to about 20% of total annual sales of television sets.[27]

A reason for the slow take-up in the market is the lack of content produced for 16:9 TV-screens. Only 1% of ORF's broadcasting time is in 16:9 format, which is a total of about 170 hours per year. This is a very small percentage in comparison with German TV stations, where e.g. ZDF reported broadcasting between 8-10% of its broadcasting time in 16:9, Premiere about 20% and the regional programmes of ARD up to 30%.[28]

1.4.3 Portable reception

Mobile reception has not been considered as an issue in Austria. Unlike Germany, there are no trials with digital terrestrial television addressing mobile reception as an application.

[26] cf. GfK-Panelmarket

[27] estimate based on an interview via telephone with the two largest consumer electronic stores in Austria.

[28] data provided by ARD, ORF, Premiere and ZDF.

1.5 Conclusions

Competition in the Austrian television market will increase

Three players dominate the development of the Austrian digital TV market which is not very advanced yet.

- ✓ The big German service providers, **DF1** and **Premiere Digital** sell the same digital packages in Austria as they do in Germany. Pay-TV operator Premiere is a well established brand in Austria ("Premiere Österreich"), and after the merger of Premiere and DF1, it can be taken for granted that the new emerging service becomes market leader in the Austrian pay-TV segment.
- ✓ In contrast, the position of the Austrian public broadcaster **ORF** with regard to the emerging digital markets is still vague. Although ORF’s declared corporate strategy is to enter new interactive markets, e.g. with its Online-Service ORF-ON, there is a lot of uncertainty with regard to digital TV. First, the scenario as to how to manage the analogue to digital terrestrial transition is unclear, assuming that there will be a need for DTTV in a few years at all. At this point of time (1999), however, players are convinced that terrestrial transmission will remain a requirement due to public service obligations. Second, ORF has not decided on a decoder standard for its digital satellite and cable services. Furthermore, ORF’s intention to enter commercial ventures (“Sport and Wettkanal”) is causing political debates as their plan is to finance the channel with the mandatory broadcasting licence fees requested from viewers to obtain basic TV service**.**
- ✓ Cable network operator **Telekabel** is already offering analogue pay-TV and has concrete plans to digitise its offer until summer 2000. Other digital services may be launched in the future by Austria’s largest cable TV operator, and other larger companies like Kabelsignal or Liwest may follow short. Today, Austrian cable operators already offer (analogue) Internet access and/or conventional telephone services via TV cable.

Large offer of analogue services satisfies consumers

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 traditional analogue free-TV via satellite or cable, consumers hesitate to subscribe to additional digital pay-TV services. Viewers in Austria can receive up to 40 analogue programmes via cable and satellite, mostly from German providers.

The limited success of digital pay-TV services in Germany and Austria so far has clearly demonstrated that consumers are not willing to pay for an additional quantity of content, but only for added value in terms of quality and exclusivity. Marketable contents for pay-TV are primarily blockbuster movies, special sports events (e.g. coverage of the European Soccer Champions League) and erotic movies. Digital packages will be successful if they can offer some of these contents on an exclusive basis. It is questionable if the Austrian market alone is big enough to make these programmes a veritable business.

Bertelsmann's opting out of Premiere has changed the market situation in Austria as well as in Germany fundamentally. Whilst the competition between the two major pay-TV-services had apparently left consumers' undecided, now the combined offer of Premiere and DF1 ("Premiere World") could increase consumer certainty and thereby boost the attractiveness of this new pay-TV-package.

Innovative and interactive services will not be drivers for digital TV in the short and medium term. Premium (but conventional) contents are the key asset.

Apart from the quantity of programmes offered, the differences between analogue and digital television are small. There are more special interest channels, but full service programmes remains. The only new offer is near-video-on-demand, mainly financed by pay-per-view. Due to the rather underdeveloped standing of German language digital TV in general, there is no incentive for content providers to offer new interactive services at least before their main business is running properly. Furthermore, there are two main obstacles to interactive services: the frequent lack of technical infrastructure for a back-channel, use of the cable TV network and the lack of a standard for decoder technology (API etc.) capable of interactive applications.

DTV development in Austria heavily depends on development in neighbouring Germany.

On many occasions, the most viable player in the digital television market, ORF, made it clear that any decision concerning the development of digital TV in Austria will be made in accordance with actions taken in Germany. ORF co-operates intensively with its German public counterparts, be it by commonly developing an electronic programme guide for digital services, or by testing its digital offer as part of the *ZDF.vision* digital package.

The most important market player in Austria is clearly not going to travel its own path and take the risk of ignoring its influential neighbour. On the other hand, ORF has started trials with cryptoworks. This "double message" can be interpreted as a "negotiating ploy" with Kirch Group.

2 Key figures for the Austrian market

2.1 Country fundamentals

	1993	1994	1995	1996	1997	1998	1999
Population (millions)		8,030	8,047	8,059	8,072	8,072	
Households (millions)		3,070	3,131	3,164	3,182	3,182	
GDP (in Euros billions)		164,340	175,680	176,020	180,760	190,590	

2.2 Equipment

As of 31 of December	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*
TV households (millions)		2,857	2,898	2,929	2,979	3,031	
TV households (% of total households)		93,1%	92,6%	92,6%	93,6%	95,3%	-
TV Households with 2 TV sets or more (millions)		1,289	1,362	1,465	1,480	1,510	
TV Households with 2 TV sets or more (% of TV Households)		45,1%	47,0%	50,0%	49,7%	49,8%	-
TV Households with 16:9 Television sets (millions)		0,001	0,004	0,010	0,034	0,100	
TV Households with 16:9 Television sets (% of TV Households)		0,0%	0,1%	0,3%	1,1%	3,3%	-
VCR Households (millions)		1,926	1,966	2,035	2,091	2,158	
VCR Households (% of TV Households)		67,4%	67,8%	69,5%	70,2%	71,2%	-
Digital STB Households (millions)		0,000	0,000	0,002	0,012	0,029	
Digital STB Households (% of TV Households)		0,0%	0,0%	0,1%	0,4%	1,0%	-
IDTV Households (millions)		0,000	-1,000	-1,000	-1,000	-1,000	
Digital TV Households (% of TV households)		0,0%	-34,5%	-34,1%	-33,6%	-33,0%	-
Digital Households (millions)		0,000	0,000	0,002	0,012	0,029	
Digital Households (% of TV households)		0,0%	0,0%	0,1%	0,4%	1,0%	-

2.3 Access to DTV

Cable

	1993	1994	1995	1996	1997	1998	1999
Home passed (millions)		1,600	1,680	1,680	1,685	1,690	
of which digital (millions)		0,000	0,000	0,000	0,000	0,000	
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%	0,0%	0,0%	-
Analogue Basic Subscribers (millions)		0,985	1,035	1,070	1,125	1,171	
Digital package subscribers (millions)		0,000	0,000	0,000	0,001	0,003	
Analogue Basic Subscribers (% of TV households)		34,5%	35,7%	36,5%	37,8%	38,6%	-
Digital package subscribers (% of TV households)		0,0%	0,0%	0,0%	0,0%	0,1%	-

Satellite

	1993	1994	1995	1996	1997	1998	1999
Satellite households (millions)		0,886	0,956	1,054	1,132	1,188	
Satellite households (% of TV households)		31,0%	33,0%	36,0%	38,0%	39,2%	-
Satellite subscribers (millions)		0,025	0,033	0,046	0,057	0,050	
Satellite subscribers (% of TV households)		0,9%	1,1%	1,6%	1,9%	1,6%	-
of which digital (millions)		0,000	0,000	0,002	0,011	0,027	
of which digital (% of TV households)		0,0%	0,0%	0,1%	0,4%	0,9%	-

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	
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%	-

2.4 Television market estimates*

Millions Euros	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*
Analogue TV Market							
Public funding		323,100	324,050	329,720	324,190	350,800	
Advertising		287,420	270,510	280,460	334,730	355,090	
Subscriptions		125,179	133,916	143,232	160,043	163,965	
Total analogue TV		735,699	728,476	753,412	818,963	869,855	
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	
Subscriptions		0,000	0,000	0,367	2,568	7,313	
Total digital TV		0,000	0,000	0,367	2,568	7,313	
TV Market							
Public funding		323,100	324,050	329,720	324,190	350,800	
Advertising		287,420	270,510	280,460	334,730	355,090	
Subscriptions		125,179	133,916	143,599	162,611	171,278	
Total TV market.		735,699	728,476	753,779	821,531	877,168	

** "**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.*