



Schriftenreihe zur Informationsgesellschaft
Band 12

Market study on 16:9 wide-screen TV in Germany and Austria

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August 2000

Die in diesem Band der Schriftenreihe enthaltenen Länderberichte zur Marktentwicklung des 16:9-Breitbildfernsehens in Deutschland und in Österreich sind Teil einer gesamteuropäischen Erhebung im Auftrag der Europäischen Kommission. Die Erhebung wurde länderweise in jedem der 15 EU Mitgliedsstaaten durchgeführt und von der französischen Forschungsorganisation IDATE <www.idate.fr> koordiniert. Salzburg Research steuerte die Länderberichte zu Deutschland und Österreich bei. Die Berichtssprache ist englisch, da die Studie Teil eines europäischen Gesamtberichts ist.

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A. 16:9 wide-screen TV in Germany

1. Introduction

This is a report about the market development of 16:9 television in Germany. It describes the technological, economic and political background of the 16:9 history, the diffusion of 16:9 TV sets, the programme output and the strategy of German broadcasters. The report contributes to an evaluation of the 16:9 Action Plan of the European Commission performed by IDATE, France.

1.1 Methodology

The report is based on media statistics provided by GfK, EACEM and EAO, and on interviews and a questionnaire survey of players in the television market. 56 businesses and organisations including broadcasters, retailers, producer, consumer and manufacturer associations and EC representatives in Germany have been contacted and asked to provide data and information. All German TV stations broadcasting nation-wide or at least reaching a large number of viewers in their region have been addressed. These are 40 broadcasters in total.

List of broadcasters contacted:

3sat	Eurosport	N24	QVC	SWR
ARD	FAB	NDR	Radio Bremen	tm3
Arte	H.O.T.	n-tv	RTL	VH-1
Bloomberg TV	hr	Onyx Music TV	RTL2	VIVA
BR	Kabel1	ORB	SAT.1	VIVA2
BR-alpha	Kinderkanal	Phoenix	SFB	VOX
Deutsche Welle	MDR	Premiere World	SR	WDR
DSF	MTV	ProSieben	SuperRTL	ZDF

Eighteen telephone interviews with key persons in the German 16:9 history and presence have delivered detailed information about the perspectives of the main players on the issues related to this development.

List of telephone interviews for market study on 16:9 TV in Germany:

Name	Organisation	Date of interview
Andreas Ebner	IRT (Institute for broadcasting technology)	21.7.2000
Bernd Schwintovsky	n-tv (PR)	10.7.2000
Christian Blankenburg	ARD (Co-ordination foreign affairs)	27.6.2000
Günther Müllern von Schönbach	SZM (broadcasting centre Munich – Kirch Group)	10.7.2000
Klaus Petri	Philips (PR)	12.7.2000
Michael Thiele	Deutsche TV-Plattform	21.7.2000
Mr. Birtrovsky	AERA (trade)	3.7.2000
Mr. Bobrovsky	Consortium of consumers ass.	21.7.2000
Mr. Brüll	SR (production)	11.7.2000

Mr. Felsch	SFB (production)	23.6.2000
Mr. Matzel	ZDF (former PALplus bureau)	14.7.2000
Mr. Neumann	SAT.1 (head of broadcasting)	10.7.2000
Mr. Peritsch	Eurosport (PR)	11.7.2000
Mr. Taskor	Bloomberg TV	11.7.2000
Mr. Vollrich	hr (head of broadcasting)	11.7.2000
Rainer Hecker	ZVEI (vice-chairman of the association of consumer electronics manufacturers)	17.7.2000
Roland Raitzel	Loewe (PR)	11.7.2000
Rolf Hochreiter	AP Management Committee	20.7.2000

1.2 Summary analysis and key findings

- a) **The EC Action Plan was an important incentive for German broadcasters to implement 16:9 broadcasting equipment.**

The Action Plan had considerable impact on broadcasting infrastructure and technology in Germany. Equipment purchased and implemented by broadcasters during the Action Plan period is still in use after the end of the Action Plan.

- b) **In Germany the Action Plan led to the development of the PALplus standard. The history of 16:9 TV in Germany is – to a large extent – the history of PALplus.**

The German broadcasters' decision to support PALplus standard terminated the further development of alternative systems, particularly the MAC-standards (even HDTV). The initiative to improve the existing PAL-system (which was originated in Germany in the 1960s) was mainly carried by the public broadcasters all over Europe, under the leadership of German public broadcaster ZDF.

German broadcasters were able to quickly advance their plans to start PALplus broadcasting in early 1994 as a direct result of the 16:9 Action Plan. At the beginning of 1998, PALplus programmes were broadcast on a regular basis in nine European countries, which made PALplus the mostly used standard for 16:9 transmissions in Europe.

- c) **The diffusion of 16:9 television takes more time than anticipated. Most German commercial broadcasters are not producing and broadcasting programmes in 16:9 format at all. The public broadcasters are transmitting about 7-9 % of their programme in wide-screen format. As a consequence, consumers are hesitating to purchase 16:9 TV sets.**

1995 can be regarded as the real commercial start for the 16:9 TV set German market. The market share of 16:9 sets has increased from 1 % to 5.6 % (1999) since then. In total, about 3 % of the installed base (TV households) were 16:9 sets in 1999. Most retailers believe that the future of TV is 16:9, but it will take time for the market to take off.

The reason for the slow market development is that the "chicken and egg" problem has not been solved in Germany yet. Broadcasters do not produce and broadcast enough premium content in 16:9 format that would create large-scale consumer demand for 16:9 TV sets. Especially most of the big sports events are still produced in 4:3. Broadcasters are afraid to annoy their 4:3 audience by transmitting in 16:9 (black stripes on the screen). They will rather not take the first step, as Christian Blankenburg from ARD made quite clear: "The volume of 16:9 broadcasts at ARD will correspond to the market share of new sets."

d) 16:9 TV sets are gradually developing into an important growth market for the German consumer electronics industry, accounting for about 15 % of today's sales value of TV sets. The growing DVD market could be a new incentive for 16:9 sets.

German manufacturers of consumer electronics came under pressure in the early 1990s. The economic situation was difficult (low growth rate of GDP, high costs for integration of the former GDR), competition from Asian producers increased and the sales of 4:3 TV sets (units) decreased by 13 % between 1994 and 1997.

In this difficult business environment, wide-screen TV sets were considered as a hope market for the future. Indeed, although the number of sets sold is still below 10 % in total, wide-screen sets already account for about 15 % of the sales value and are regarded as an important growth market. This applies especially for high-end manufacturers such as Philips and Grundig.

2. Background information: 16:9 national history and key dates

2.1 Technological, economic and political background to the 16:9 Action Plan 1993-1997

2.1.1 Technological background

The failure of the EC HDTV policy in Germany

In Germany, technological innovation of the television manufacturing and production industry in the forefront of the EU 16:9 Action Plan was characterised by two developments:

- Firstly, the German government supported the official EU-strategy to assist the European television industry by fostering the new television standard MAC (D, D2 or C-MAC).
- Secondly, technological innovation was brought forward by improving already existing television systems, which resulted in the development of PALplus.

While the first strategy – which finally failed – was especially pushed by the German government and the television manufacturers, the second approach – which turned out to be much closer to market reality – was primarily realised by the German public broadcasters and hardware manufacturers.

The failure of the new technological standard MAC in Germany had three main reasons.

- Firstly, the legally binding MAC-Packet Directive, which forced operators of high powered satellites to broadcast in MAC, did not lead to the expected breakthrough of the MAC-system. Instead, it caused a considerable competitive disadvantage for the only operator of high powered satellites in Germany, Deutsche Telekom.

Through the Community's MAC-Packet family Directive, Deutsche Telekom was forced to use the MAC-standard for television distribution on its high powered satellite TV-SAT 2 regardless of the fact that this standard was neither supported by German broadcasters nor did users express interest in the system by purchasing D2-MAC satellite receivers. The five satellite transponders available on TV-SAT 2 remained mostly unused which meant a great loss in revenue for Deutsche Telekom as well as for the German government.

Beneficiary of this situation was competitor Société Européenne des Satellites S.A. (SES), which operated its ASTRA low and medium powered satellites from Luxembourg. While Deutsche Telekom struggled with missing consumer interest, ASTRA, which was transmitting in standard-PAL, could register a steadily growing number of users. Despite the EC Directive, PAL became the de facto standard for satellite transmission. Finally, as the market for D2-MAC-receivers in Germany never took off, Deutsche Telekom discontinued the transmission of D2-MAC-signals via TV-SAT 2 at the end of 1994.

- A second reason for the failure of MAC in Germany was that the German broadcasters refused to originate their programmes in MAC primarily as a result of missing consumer demand and secondly because of the costs of new broadcasting equipment in D2-MAC. German television viewers seemed to be satisfied with the quality provided by PAL-television

and hence refused to embrace the newly emerging television standard MAC by purchasing the necessary MAC receivers.

As a result, especially the commercial broadcasters and satellite operators did not positively react to the approach of the European Commission to enforce its EU MAC/Package Directive. In fact, they refused to sign a contract with the German Ministry of Postal Services and Telecommunication to comply with this directive. As the MAC-standard was incompatible to PAL, it would have been up to the broadcasters to pay the high costs for new transmission equipment without delivering a service that was perceived as an added value by the TV audience. Thus, the broadcasters refused to originate their programmes in MAC.

As the MAC standard was also not capable of terrestrial transmission, severe objections came also from largely terrestrial broadcasters like German public broadcaster ZDF. ZDF reacted mostly hostile to the EC policy on HDTV based on the satellite transmission systems D2-MAC and HD-MAC, since this strategy was considered a threat to the stations' viewer base. The public broadcaster feared that the potential success of others using MAC-transmission would create a competitive disadvantage. While boycotting the MAC system, the ZDF went its own way and took over the leadership in the group dedicated to further develop and improve the existing PAL-system, the PALplus board.

- Finally, it slowly became clear that the MAC system as well as PALplus were only interim technical solutions on the way towards digital television.

All these reasons contributed to the fact that the MAC-technology finally failed in Germany.

The PALplus alternative

Parallel to the effort to enforce the MAC-standard, technological innovation took place by further developing and improving already existing television standards. The initiative to improve the existing PAL-system was carried out mainly by the public broadcasters all over Europe, under the leadership of German public broadcaster ZDF. The requirements for the improved standards were clear: The new technology should be compatible with existing PAL, enable terrestrial transmission, support the wide screen format and should also deliver images and sound of better quality.

Within a short period of time, the PALplus standard was embraced by the industry. The original plan had been to launch PALplus transmissions in the third quarter of 1995 at the International Broadcasting Fair (IFA) in Berlin, but then the technical development ran even faster than planned. The working groups within the PALplus board had finalised the technical specifications for the new standard around the end of 1993. At the beginning of 1994 these specifications were submitted to the international standardisation organisation ITU (=International Telecommunication Union), but the formal procedures of standardisation there took some more months.

The German consumer electronics industry did not even wait for the formal decision of ITU, it was satisfied with the technical agreement reached within the PALplus board and started the development of PALplus devices immediately. A lot of broadcasting equipment had already been constructed during the course of the development procedures within PALplus board. These prototypes could immediately be used for commercial PALplus transmissions. The prototypes of PALplus consumer devices were not yet marketable, especially the integrated circuits were still

too large. Small PALplus decoders fitting into an average 16:9 TV set had to be developed.¹ So, the hardware for PALplus transmissions was already in place, but no PALplus TV sets for consumers.

Although television manufacturers were lagging behind to produce TV sets capable of PALplus, especially the content providers used PALplus for television transmissions in the 16:9 format. While German broadcasters were able to quickly advance their plans to start PALplus broadcasting in early 1994 as a direct result of the 16:9 Action Plan, TV set manufacturers were unable to complete their plans to bring adequate TV sets that supported PALplus to the market. Unlike other market introductions of new technologies, there was the unusual situation that content in PALplus was already available, while the actual hardware – the PALplus-receivers – was still missing. This demonstrates the efficient and rapid working procedures of the PALplus board.

On 1st January 1996, the PALplus board published the specifications of PALplus in order to support the further dissemination of this standard for wide-screen transmissions. Television manufacturers interested in further developing and producing PALplus devices, were offered to use the standard for a reasonable and fair license fee without becoming members of the PALplus board. No manufacturer who had not joined the board already made use of the offer to buy such a license. Only the members of the PALplus board produced PALplus devices – before 1996 as well as afterwards.

At the beginning of 1998, PALplus programmes were broadcast on a regular basis in nine European countries², which made PALplus the mostly used standard for 16:9 transmission in Europe.

From a technological perspective, the decision for the PALplus standard is not uncontroversial. Although technicians agree that PALplus is a highly sophisticated system which realises user-friendliness through its compatibility with standard-PAL, some criticism was provoked by the fact that it is an analogue technology. An argument against the PALplus standard was that an analogue system would not make sense at a time when the advantages of digital television had already become visible and could technically be realised. The initiators of PALplus regarded the standard as an interim solution, a bridge to the digital future. Looking back, this view can be confirmed. Without PALplus, the introduction of 16:9 television in Germany would have been even more difficult.

2.1.2 Economic background

The European strategies for the introduction of HDTV and advanced television services through various EU directives and action plans starting in the mid 1980s were clearly aimed at strengthening the ailing European consumer electronics industry which was under severe pressure, especially from Japanese and other Asian imports. While the computer manufacturing and audio-/video sectors were dominated by international competitors, television manufacturing was a sector where European players still had their share. This was strengthened by the fact that patents for PAL and SECAM were issued only to selected Japanese TV manufacturers. In this protected market environment, the market share of Asian television imports accounted for only 14 %.³

¹ Information based on an interview with Andreas Ebner from IRT (Institute for broadcasting technology) on 21st July 2000.

² Austria, Germany, Greece, Italy, Portugal, Switzerland, United Kingdom, Spain.

³ Kleinstauber, Hans J.: "HDTV Politik." In: Rundfunk und Fernsehen. 42/1994, p. 5 - 23.

The situation began to change as the patents for the existing European television technologies PAL and SECAM gradually expired and as sales of television equipment started to decrease.

German television manufacturers were affected, too, as sales in consumer electronics plummeted and the German consumer electronics industry faced its deepest low ever at the beginning of the 1990s. In 1994, industry turnover plunged by 9 % to DM 20.6 billion and took another 9 % dive in the following year. There were mainly two reasons for the decrease of consumer spending on HiFi and television equipment:

- The general economic situation in the early 1990s: Only modest growth of GDP, and, at the same time, the integration of the former GDR put severe strain on the tax payers' purse.
- Cultural reasons: While cars and housing may count as status symbols in Germany, consumer electronics – unlike in Japan and in the USA – were not considered as prestigious objects at that point in time. Consequently, 16:9 television sets were not a purchasing priority for (affluent) German consumers. The image component of consumer electronics has dramatically increased since.

In spite of these difficulties, consumer electronics retailers regarded the wide screen format as well as digital television as a way to boost sales in this temporarily stagnating market.

2.1.3 Political background

European industrial policy considered the MAC-Paquet Directive and the MAC introduction strategy an integral and thus unquestioned part of the European strategy for the introduction of HDTV. As such, any deviation from this strategy was seen to seriously weaken the European stance on HDTV on a global level.

The German government fully supported this strategy and heavily subsidised projects like the development of the high powered satellite TV-SAT 2 by Deutsche Telekom. Built with public funds, the operators of TV-SAT were forced to comply to the MAC Paquet Directive, although it meant – as shown above – a competitive disadvantage.

Despite the failure to introduce the new MAC-standard in Germany, the German government also fully supported the 16:9 Action Plan by signing the Directive in 1993. The 16:9 Action Plan was considered the logical continuation of the European HDTV strategy to strengthen the television industry in Europe. Political support for the advanced television services strategy, however, began to crumble two years later.

The debate was triggered by an article in the German news magazine "Focus", entitled "Subventionen für Hollywood", which was published in the fall of 1995. The magazine claimed that mainly the US film industry would benefit from the 16:9 Action Plan, due to the fact that Community funding in the framework of the 16:9 Action Plan was used to convert already existing U.S. film material into the 16:9 format. German politicians were strongly irritated by this article which not only caused a national discussion on the strategic goals of the initiative, but also had serious impact on the discussion concerning Action Plan funds and the actual prolongation of the 16:9 initiative within the EU parliament itself.

2.2 The national industrial policy in the field of 16:9

National industrial policy clearly aimed at actively taking measures to aid the German consumer electronics manufacturers. Particularly TV manufacturing was an industrial sector where German producers were still able to compete very well with their mainly Japanese counterparts. The German industrial policy at the beginning of the 1990s tried to maintain and even strengthen this position by actively communicating and lobbying the interests of German TV manufacturers in different European bodies. Philips for instance, a major producer of TV-tubes in Germany, was one of the industry players severely effected by the decrease of consumer electronics sales. Initially, Philips had a strong interest in the launch of the MAC-system, and with the German government Philips had influential supporters who lobbied at the European level for initiatives to support its case.⁴

However, while the German industrial policy co-operated very well with consumer electronics manufacturers, it did less so with other important players, especially with the commercial and public broadcasters. Hence, the broadcasters showed none or only little interest in D2-MAC.

There has never been any lobbying from part of German consumer associations to influence national industrial policy, neither pro 16:9 nor contra 16:9. For German consumer associations 16:9 has never been an important issue. Therefore their position has always been very neutral. They think that 16:9 is neither an advantage nor a disadvantage for German consumers. They do not even recommend 16:9 or 4:3 to any consumer.⁵

2.3 Interest groups/institutions involved in the development of the 16:9 German market

The development of 16:9 television in Germany was significantly influenced by two special interest groups (Deutsche TV-Plattform, PALplus board) and by the International Broadcasting Fair (IFA) in Berlin.

2.3.1 Deutsche TV-Plattform

The *Deutsche TV-Plattform* is the most important television forum where all the industry's sectors are represented. Members include private and public broadcasters, cable-TV and satellite operators, programme producers, television manufacturers, the relevant ministries, the Landesmedienanstalten (the regional media authorities), universities, research institutes and other organisations.⁶

⁴ Information based on an interview with Rolf Hochreiter (former member of the Action Plan management committee) on 20th July 2000.

⁵ Information based on an interview with Michael Bobrovsky (consortium of consumers associations) on 21st July 2000.

⁶ Full members of Deutsche TV-Plattform: ANGA (Assoc. of private cable-TV operators), bmt (Bavarian Media Technology), Bertelsmann Broadband Group, Bosch Multimedia, Convergence Integrated Media, Deutsche Telekom, various associations of ZVEI (Central association for the electronics industry), Fujitsu Siemens Computers, FUN Free Universe Network, GMD (Research center for information technologies), Grundig, Infineon AG, Kirch Group, Landesmediananstalt Baden-Württemberg, Loewe, Nokia Multimedia Terminal Networks, Panasonic, Philips, Premiere World, Radix Electronics, Rohde und Schwarz, RTL, SAT.1, Scientific Atlanta, Sony Wega Productions, Telebild, TechniData, TechniSat, Thomson, Thyssen Krupp Multimedia, VPRT (Association for private broadcasting and telecommunication), WDR, XSYS, ZDF.

The platform was founded in November 1990 with the name "National German HDTV-Plattform" as part of the European HDTV-Plattform. From the very beginning the platform consisted of members of all parts of the television value chain. There were hardware manufacturers, programme producers and broadcasters, all with equal importance within the group. In 1993 the platform dropped the expression "national" from its name and called itself "German platform for HDTV and new television systems" ("Deutsche Plattform für HDTV und Neue Fernsehsysteme e.V."). At first, HDTV was the main focus of attention. In the mid 1990s, the scope of interest was widened to other issues. The shift can also be traced in the second name change of the association: In autumn 1996, the group changed its name to "German TV-platform" ("Deutsche TV-Plattform e.V.").⁷ The declared dedication to HDTV was replaced in favour of supporting wide screen television not bound to any specific transmission system.

Despite the many interests that were represented in the group, the members reached a consensus and took a clear position in 1994 with the announcement to support the 16:9 wide-screen format. Overall, the German TV-platform policy was always in agreement with EC policy.

2.3.2 The PALplus board

Initially, PALplus was the name of a strategy group founded in 1989 in order to develop an enhanced system for terrestrial transmission compatible with standard-PAL. In the beginning, the group consisted of the public broadcasting corporations of Germany (ARD and ZDF), Austria (ORF), Switzerland (SRG) and the United Kingdom (BBC and UKIB, United Kingdom Independent Broadcasters) together with the consumer electronics manufacturers Grundig, Nokia, Philips and Thomson. Sony as well as the Spanish and Portuguese broadcasters joined the group later on. In 1995 one of the four big Korean electronics manufacturers, Samsung, joined the PALplus consortium.

While the big players in TV manufacturing – Grundig, Nokia, Philips, Samsung, Sony and Thomson – invested heavily in the development of PALplus, other players did not join the PALplus board. Critics stated that the "admission fee" (about three million Euro) to join the PALplus group and to participate in the technological development of a higher quality system was prohibitive for smaller firms such as Metz or Loewe. Others, especially former members of the PALplus board, had the impression that these companies were not even interested in joining the group.

The argument for the admission fee to join the board was quite clear. Companies joining the board in the very beginning, like Philips or Grundig, did not have to pay any entrance fee, but after three or four years of technical research and development these firms had invested a lot of money for the realisation of PALplus. Therefore it was considered fair that other firms, which wanted to join the group at a later stage, would have to pay a certain amount for the participation in the results of these R&D efforts. Sony and Samsung, for instance, who entered the PALplus board later on, had to pay the admission fee. For smaller firms like Loewe the amount of money claimed by the PALplus board for joining the group would not have been as high as for large multinational companies.

Companies that did not wish to join the actual development of the standard were not excluded, but could acquire licenses at fair prices to also participate in the development of PALplus de-

⁷ Information based on an interview with Michael Thiele from "Deutsche TV-Plattform" on 21st July 2000.

vices. ZDF representatives state that the PALplus board always maintained an "open door policy" without any unfair restriction for applicants to the group.⁸

The "headquarters" of the PALplus board, which was led by German public broadcaster ZDF, were located at the ZDF-offices in Mainz. For several years, the board ran a public relations office there – the so called PALplus bureau – with Mr. Matzel as head of this bureau in order to provide a contact point for all market actors interested in the PALplus standard. Chairman of the PALplus board was Mr. Albrecht Ziemer, who was technical director of ZDF at that time and is production director of ZDF now.

After successful trials which aimed at demonstrating the feasibility of PAL+, and after German broadcasters started to broadcast some of their programmes in PAL+, the PALplus board ended its work at the end of 1996.

2.3.3 The International Broadcasting Fair (IFA)

The International Broadcasting Fair, which takes place every two years in Berlin, has always been an important forum with regards to trends on the consumer electronics market and the future of television. Since 1924, IFA was a central meeting point for consumer electronics manufacturers, retailers, broadcasters and consumers alike. As such, IFA has always been the event to showcase newest industry developments to an interested public and to gauge the market potential of new products. At the same time, IFA has also provided a technical forum for industry representatives to discuss important industry issues and set the course for important developments. IFA was, for instance, the place where the following revolutionary developments have first been introduced to the public:

- colour TV (1967)
- PALplus and wide screen television (1995)
- digital television (1997)
- DVD-technology, not yet marketable⁹ (1997)
- DVD for a mass market (1999)

16:9 was the main topic at IFA 1995. It was the most important public presentation of the new PALplus-standard with numerous launches of new television sets with the 16:9 aspect ratio by all important manufacturers¹⁰, with screen sizes from 24" to 32", and the start of competition between various broadcasters regarding 16:9 transmissions. Many signals at the IFA 1995 suggested the market take-off for 16:9 in PALplus in the very near future.

At IFA 1997, however, digital television was in the limelight. Although 16:9 was still a topic, it was clearly ruled out by DVB, despite the fact that wide screen television and DVB were not competing systems. It also became very evident that PALplus was only an interim technology which contributed to the impression that 16:9 lost some of its importance as DVB was not associated so much with the wide-screen aspect ratio as PALplus.

Nevertheless, German public broadcasters ARD and ZDF took IFA as an opportunity to promote 16:9 via wide-screen transmissions of all their live programmes from the fair. Even if 16:9 was certainly not the main focus, it was still an issue.

⁸ Information based on an interview with Mr. Matzel from ZDF on 14th July 2000.

⁹ In 1997 there were still competing standards for DVD sound decoding, so everybody was waiting for a common DVD standard.

¹⁰ Philips presented 10 models of 16:9 TV sets, Thomson introduced 15 new TV sets with the 16:9 aspect ratio.

In addition, IFA 1997 marked the first mass market presentation of the new Digital Video Disc (DVD), although at that time there were still competing standards regarding the specifications for sound on DVD. From the beginning, DVD has been designed for multiple use with 4:3 as well as 16:9 format. Therefore, DVD has always been a complementary product for wide-screen TV.

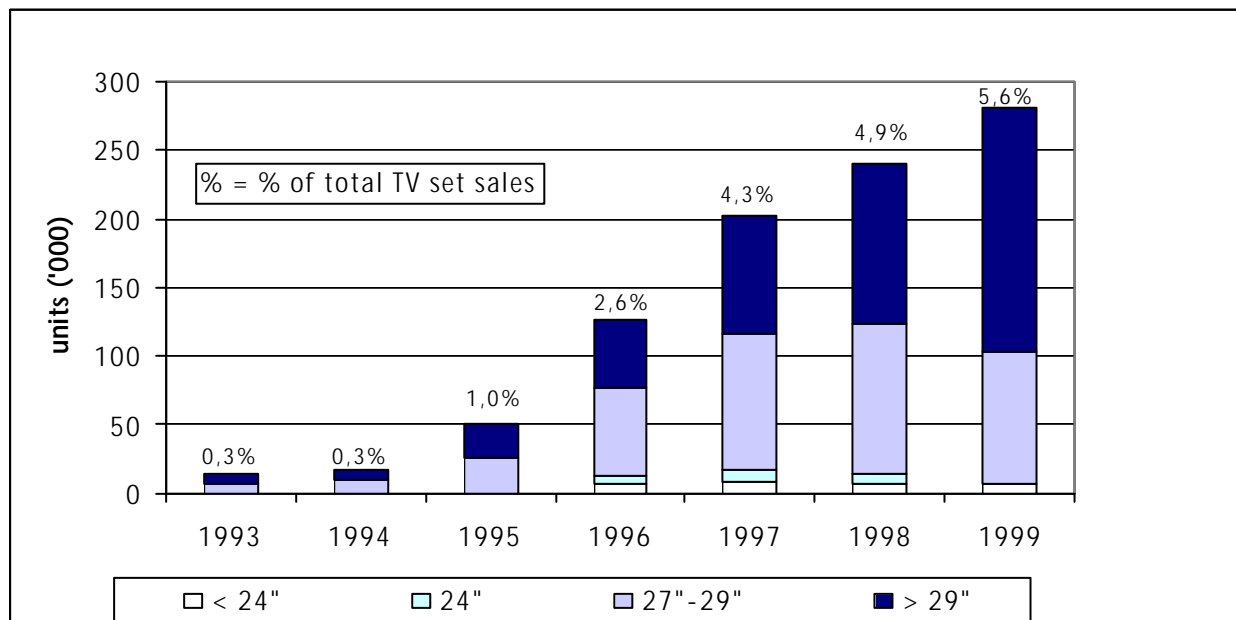
3. The 16:9 market evolution: facts and figures

3.1 Key figures and statistics for wide-screen TV sets sales

16:9 TV sets were commercially launched in 1993 with about 14,300 wide-screen units sold. In 1994 this figure increased to 18,100 sets sold. This disappointing growth rate improved in 1995, when about 1 % of the total sales were wide screen television sets. Thus, 1995 can be regarded as the "real" commercial start for 16:9, due to the fact that 16:9 receivers with PALplus have only become available in 1995, although some broadcasters had started to transmit in PALplus already in 1994. In 1993 and 1994 only 16:9 receivers with D2-MAC and/or standard-PAL decoders (with the option to zoom up pictures broadcast in 4:3 PAL in letterbox-format to full-screen mode) were sold in Germany.

In the second half of the 1990s, there was a steady, but modest growth of 16:9 TV sets sales, reaching 5.6 % of total sales in 1999. Since 1995 the increase in sales of 16:9 TV sets has been rather linear, without any extraordinary sales figures in any specific year. EACEM forecasts about 400,000 units of 16:9 TV sets sold in 2000, which would be about 7 % of total TV sets sales. Overall the market share of 16:9 TV sets is expected to increase further on. More than half of the 16:9 TV sets sold today are TV sets with a diagonal of at least 29".

Sales of 16:9 TV sets (in units) by screen size



The graphic above shows the distribution of the wide-screen TV market by screen size, 16:9 is no issue for small screen sizes.

- Sales of 16:9 TV sets with a diagonal under 27" are insignificant. Manufacturers in Germany have even ceased to produce 16:9 TV sets with small screen sizes: 16" TV sets have

been produced by Sony for some time, 20" TV sets by Sony and Grundig, but then both companies stopped the production of small sized 16:9 TV sets.¹¹

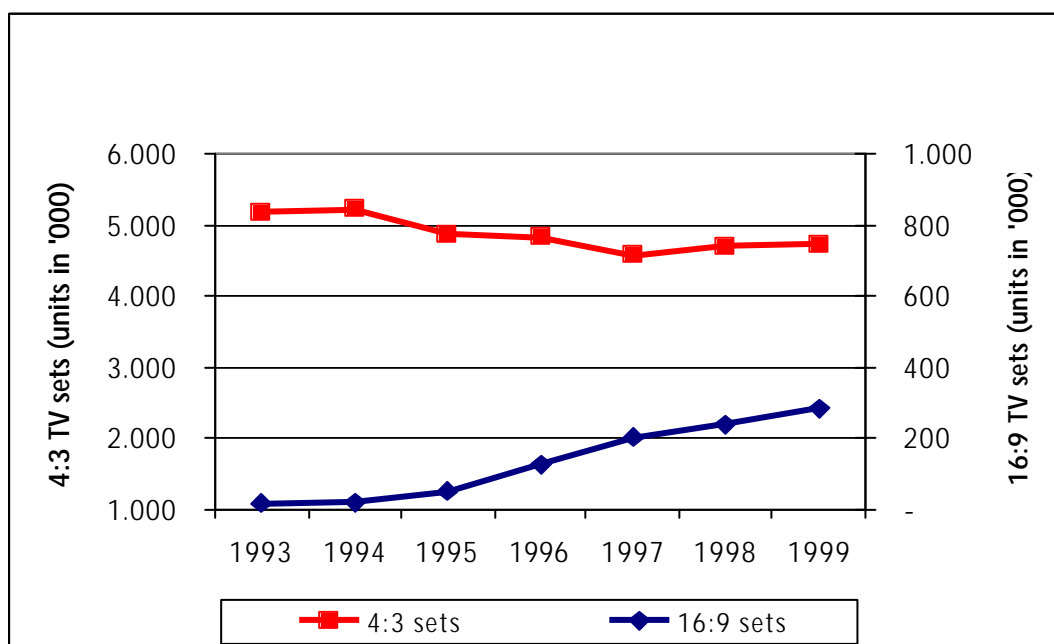
- The vast majority of 16:9 TV sets sold have been screen sizes over 27", with a trend towards sets with more than 29" – corresponding to a general tendency to even larger screen sizes.

The reason is quite obvious: The screen of a 16:9 set is about 15 % smaller than a 4:3 set with the same diagonal. Taking into account that the majority of programmes is not broadcast in 16:9 format, the size of the picture is additionally reduced by black stripes on the sides of the screen. This is why advertisements for 16:9 TV sets always compare 4:3 and 16:9 sets with the same screen height and not with the same screen diagonal. Measuring by height, the 16:9 screen has of course a larger image area.

Regarding consumer electronics retail networks, Germany is dominated by multiple chains and buying groups which together hold about 76 % of the market. The rest is held by department stores/mail order houses (14 %), hypermarkets/cash+carry (7 %) and independents (4 %).¹² Regarding sales of 16:9 TV sets, mainly multiple chains and buying groups play an important role, not only due to their market share of 33 and 43 % respectively but also because of their technical competence, which department stores/mail order houses and hypermarkets/cash+carry cannot compete with. Furthermore 16:9 sets still are mainly represented in the high-end sector of consumer electronics, where multiple chains and buying groups clearly take a leading position.

In Germany, sales of TV sets (in terms of units sold) have been stagnating since the mid 1990s. Today, the number of units sold per year is lower than in 1993. Sales of 16:9 sets, however, are growing fast, and may be a major argument for consumers to purchase a new set in the future. But this will take some time, as the percentage of 16:9 sets sold per year is still below 10 % of the total sales figure.

Sales of 4:3 and 16:9 TV sets in Germany (units sold)



¹¹ Information based on an interview with Mr. Rainer Hecker (vice-chairman of the association for consumer electronics manufacturers within ZVEI) on 18th July 2000.

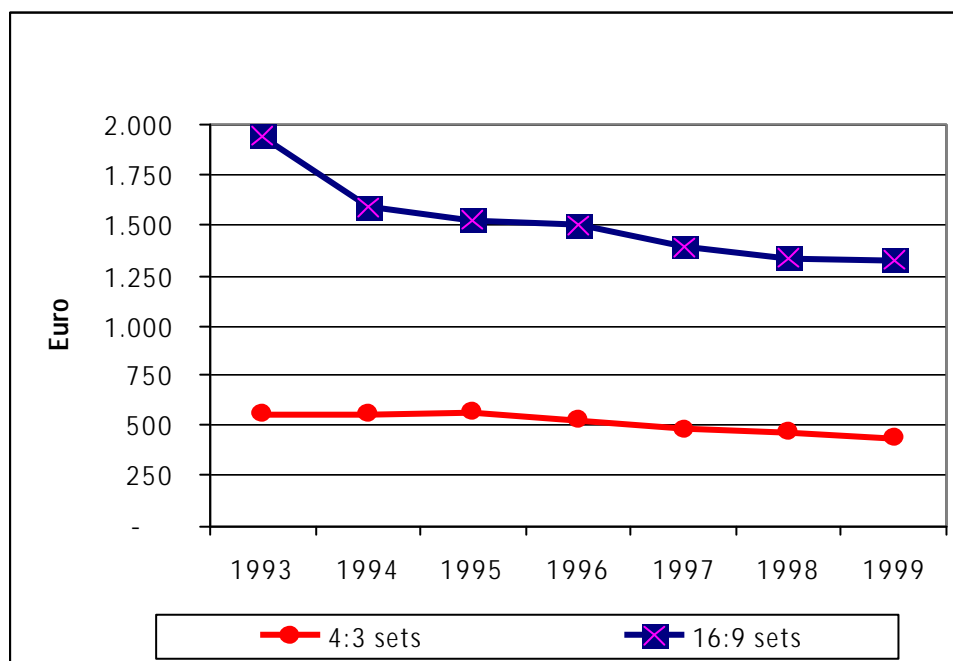
¹² Data provided by GfK in June 2000.

	1993	1994	1995	1996	1997	1998	1999
16:9 sets (units sold)	14	18	50	126	202	239	281
4:3 sets (units sold)	5 175	5 225	4 866	4 808	4 552	4 683	4 704
Index 16:9 (1996=100)	11	14	39	100	160	189	222
Index 4:3 (1996=100)	108	109	101	100	95	97	98
16:9 as % of total TV sales	0.3%	0.3%	1.0%	2.6%	4.3%	4.9%	5.6%

Source: GfK

The market share of 16:9 sets is higher in terms of sales value than in units. 15 % of revenues from TV sales stem from 16:9 sets. This is more than twice the percentage of units sold. 16:9 plays a major part in the television high-end sector, The prices of 16:9 TV sets in comparison to 4:3 sets are described below. Retailers estimate that prices will continue to go down, which may be an important impetus to purchase 16:9 sets in the future.

Average price of TV sets in Germany



	1993	1994	1995	1996	1997	1998	1999
4:3 sets	552	556	568	528	483	466	443
16:9 sets	1 948	1 588	1 524	1 501	1 391	1 340	1 325
Index 4:3 sets (1994 = 100)	99	100	102	95	87	84	80
Index 16:9 sets (1994 = 100)	123	100	96	95	88	84	83
4:3 as percent of 16:9	28%	35%	37%	35%	35%	35%	33%

Source: GfK

The prices for 16:9 TV sets have decreased in Germany since their introduction in 1993 and have now reached an average of 1300 Euro per set. However, the price index (taking 1994 as the basis) shows that prices for 16:9 sets have not decreased more significantly than 4:3 sets. In 1999, the average price for both types of TV was about 80 % of the price from 1994 (see index in table below). Especially since 1998, the price level is not decreasing as fast as before.

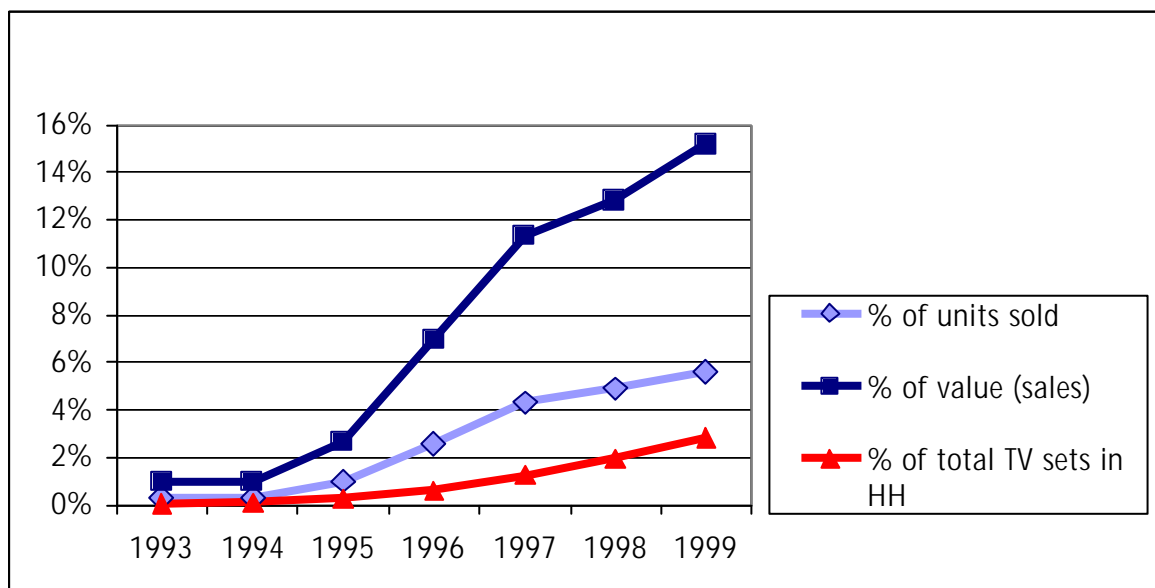
In average, a 16:9 TV set costs almost three times as much as a 4:3 TV set, not taking into account that this statistic includes the low-end 4:3 sets with small screen sizes whereas the 16:9 market mainly consists of large screen sizes. Such low-end television sets with small screens are as cheap as Euro 150, whereas prices for a (large screen) 16:9 device range from Euro 600 - 3,800. Comparing the prices of 16:9 and 4:3 with the same screen sizes shows that a 16:9 set costs about 350 - 500 Euro more than a comparable 4:3 set.¹³

The high-end category with prices above 1,500 Euro is actually dominated by 16:9 television sets. Especially plasma- or LCD-displays are almost always built as wide-screen formats and the vast majority of video-beams is capable of the 16:9 aspect ratio.

In May 2000, the German association for consumer electronics GfU (Gesellschaft für Unterhaltungselektronik), stated that the wide-screen format is already dominating TV sets with large screen sizes. 75 % of all TV sets with diagonals over 28" sold, are wide-screen devices. GfU estimates that sales of 16:9 TV sets will amount to approximately 400,000 units in the year 2000. In 1999, there were more than one million households with 16:9 television sets in Germany. GfU is expecting that two million wide-screen devices will be located in German households by the end of 2001.¹⁴

This is a rather optimistic scenario considering the development of 16:9 household penetration in Germany during the last years as described in the following chart.

Market share of 16:9 TV sets



After market introduction in 1993, it took about 4 years for 16:9 sets to reach 1 % of household penetration. In 1998, only 1.97 % of German TV households were equipped with a 16:9 TV set, and in 1999 only 2.83 %.

With less than 3 % household penetration after 6 years since market introduction, 16:9 television is clearly lagging behind market expectations. According to a rule of thumb valid in this

¹³ Data based on results of a survey with consumer electronics retailers in Germany in June 2000.

¹⁴ Cf. Press release from GfU, 8.5.2000.

industry sector, a product is said to be doing well when reaching a 5 % household penetration within 5 years of market introduction. The minimum level to even be considered a viable product is 3 % household penetration within the first 5 years since market introduction. From this point of view, 16:9 television has not even reached the minimum.

Another sign for the slow development of the 16:9 market is the delay in market take off. Usually, 1 % of household penetration is considered the threshold for market take-off and the point, where systematic market growth can be expected without too much additional promotional effort to boost development. In Germany, the 1 % threshold was passed only in 1997, 4 years after the product launch and even after taking this hurdle, market penetration with 16:9 sets has been sluggish.

Considering all those figures, the development of the 16:9 market was lagging far behind expectations, as figures predicted for the year 1997 and 1998 are only reached in 2000. Nevertheless, 16:9 television in Germany cannot be said to have failed completely. Although the market has been growing very slowly, it is not stagnating. The main reason for this poor development seems to be the small number of hours broadcast in 16:9,¹⁵ which reduces the added value for consumers.

Despite the poor market performance in terms of growth, the chart above demonstrates the relative importance of 16:9 for the German consumer electronics industry. In 1999, more than 15 % of the turnover from TV sales has been generated by 16:9 sets. Furthermore, in the high-end sector of TV receivers, German manufacturers still hold a very good position compared to their competitors, while most of the market share in the small sized low-end portable sector has been taken over by mainly Asian players. In the sector of large-screen 16:9 sets, German players are still in the pole position.

Technical features of 16:9 devices

In Germany, more than 90 % of the wide-screen broadcasts are transmitted in PALplus, yet there is a curious circumstance. Only a minority of the 16:9 TV sets available in retail stores are actually equipped with the necessary chipsets to fully exploit the advantages of PALplus transmission, such as advanced image and sound quality.

PALplus is primarily an analogue transmission system for wide-screen broadcasting, compatible with standard 4:3-PAL. Furthermore, the whole PALplus specification has been designed to increase the overall transmission and picture quality. This is achieved by implementing special techniques that separate the signals for colour and brightness of the image. The technology also ensures that this newly reached quality is available at all times of transmission, regardless of weather conditions or other interruptions.

These techniques to improve picture quality demand additional, rather expensive hardware within the receiver. Although these additional features called Color Plus and comb filtering enhance the sharpness of the image, they are not essential for the reception of PALplus transmissions on a 16:9 TV set in full-screen mode. 16:9 TV sets without a PALplus decoder simply zoom up a picture transmitted in PALplus by interpolation of lines, so they do not provide the whole

¹⁵ Information based on data provided by German retailers in June and July 2000.

resolution of lines as a PALplus receiver does, but the difference in picture quality is so minute that an ordinary viewer is not capable of recognising it.

As these additional chipsets are rather expensive, manufacturers have started to produce 16:9 TV sets enabling the reception of PALplus transmissions, but without having the hardware that supports the whole features of PALplus. In the beginning, there has been some dispute whether such devices should be allowed to be named a "PALplus" device. Yet, more and more manufacturers slimmed their 16:9 TV sets, and some producers even launched their own compatible version of wide-screen television, e.g. Loewe with its "Super-PAL".

Today there are practically no 16:9 TV sets available in German retail stores that are actually equipped with a PALplus decoder. Only about 1 % of the 16:9 receivers sold have got a PALplus decoder inside, which encourages retailers to claim that "PALplus has died!"¹⁶ However, this is only "half the truth" as – as described in Chapter 1 – PALplus plays a considerable role in 16:9 broadcasts. The conclusion is that, although PALplus has prepared the German market for 16:9, almost no 16:9 TV set has a PALplus decoder inside. The consumers, however, do not care. What counts for them is the aspect ratio of 16:9.

16:9 Complementary Products

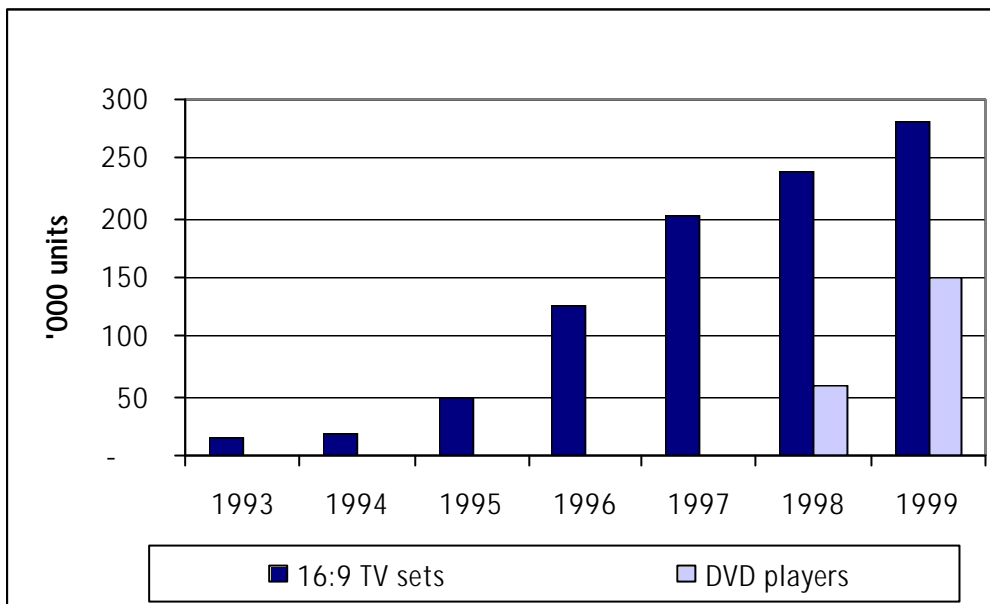
There are some complementary products in the consumer electronics market influencing the sales of 16:9 TV sets, while others remain irrelevant for the market development of 16:9. The following table is based on feed-back from CE retailers to a questionnaire in June and July 2000:

Products influencing 16:9 market development	Products NOT influencing 16:9 market development
<ul style="list-style-type: none"> • digital satellite-/cable-receivers (partly) • DVD-players (driving force) • Dolby Surround Sound (driving force) • video-beams (driving force) 	<ul style="list-style-type: none"> • VCRs (video cassette recorders) • analogue satellite receivers • home video cameras

Introduced in Germany at the end of 1997, DVD developed momentum in 1998 with more than 50,000 units sold in the first year. The majority of German retailers consider DVD players to be a driving force for wide-screen TV sets sales. However, due to the early development stage of the DVD market, there is no statistical data available showing how the number of people buying a 16:9 TV set corresponds to owning a DVD player.

¹⁶ Information based on interviews with German retailers in June and July 2000.

Development of DVD and 16:9 markets (sales)



More than the 16:9 sets, the sales figures for DVD players live up to the industry's expectations. The main target group for DVD-players are early adopters, willing to invest into home entertainment centres and a clear preference for the 16:9 aspect ratio. DVD players are true complementary products for 16:9 TV sets, and quite often they are purchased together.¹⁷

It is rather risky to forecast the household penetration of DVD players for the next years, since it is a very young market. Long term estimates on the acceptance of DVD by German consumers as well as market growth are not yet available. Although there are very positive signs, DVD will probably not be the kind of killer-application for wide-screen television, making 16:9 TV sets the cash cow of the consumer electronics sector. Nevertheless, DVD seems to contribute to 16:9 sales and will probably give the market an additional dynamic, especially as hardware prices are going to decrease for both devices.

Dolby Surround Sound systems and video-beams also seem to be a driving force for 16:9, usually they are used together with DVD players – all components together creating some kind of “Home Cinema”. Video-beams are not as important as DVD players since their price is still very, very high (about 3,000 to 15,000 Euro), therefore they address only a very small affluent consumer segment. Dolby Surround systems are not as important as DVD players, since for most consumers picture quality is considered more valuable than sound quality. For these reasons DVD players are the main complementary product for 16:9 TV sets.

¹⁷ Information based on interviews with German retailers in June and July 2000.

3.2 Key figures for 16:9 broadcast

Roll-out

From 1992 to 1994, ARD conducted a pilot project with 16:9 transmissions in D2-MAC via their satellite channel 1plus. The Olympic games in Albertville (1992) and Barcelona (1992) were broadcast in 16:9, mainly to demonstrate the capabilities of the new television technologies to a specialised audience, since there were practically no D2-MAC receivers in Germany. In 1994, with the start of PALplus transmissions, ARD terminated all broadcasts in D2-MAC and instead focused on creating programmes for PALplus.

On 7th January 1994, the German pay-TV station Premiere started the first regular PALplus transmissions in Germany. Premiere was closely followed by ARD, who launched "Das Erste" as PALplus service on 12th January 1994. On 10th July 1995, 3sat, the co-operative satellite channel held by the public broadcasters of Germany, Austria and Switzerland, joined the group of PALplus broadcasters. All in-house productions of the 3sat-studio in Mainz, Germany, have been recorded and transmitted in PALplus in 16:9 since, which makes 3sat one of the major wide-screen broadcasters in the German market.

The early start of PALplus transmissions in 1994 was pushed by German public service broadcasters as well as Premiere, although at that time PALplus receivers were not even available at consumer electronic retailers. The launch of PALplus was originally planned for 1995, but then the technical development and the standardisation process went faster than expected – as already mentioned above. Actual PALplus transmissions started in 1994, whereas consumer electronics manufacturers were not able to accelerate the development and production of PALplus receivers. The first PALplus TV sets were only available on the German market in 1995. The prior existence of TV programmes broadcast in PALplus, however, actively prepared the market for the introduction of the new receivers.

Until today, 16:9 broadcasting has been the domain of German public service broadcasters. The only private broadcasting stations that have transmitted in 16:9 are the pay-TV provider Premiere, the regional private broadcaster FAB (Fernsehen aus Berlin, "TV from Berlin") and the commercial broadcaster SAT.1. FAB stopped its transmissions in 16:9 at the end of the 16:9 Action Plan. SAT.1 is only broadcasting a small number of 16:9 programmes.

Most German public service broadcasters, namely 3sat, ARD, BR, MDR, NDR, SWR and ZDF, also participated in the 16:9 Action Plan, and – in contrast to FAB – have continued and slightly intensified their 16:9 broadcasts after the Action Plan ended. With regards to wide screen television, the public service broadcasters have fulfilled their traditional role as innovators and early adopters of new broadcasting techniques as they did before, for instance with the launch of colour television or videotext. 16:9 is another testbed for public service broadcasters to underline their role as qualitative leaders in the German television market for content as well as for technical quality.

The decision of **ARD** to launch PALplus broadcasts in "Das Erste" had a domino effect that caused most of the regional programmes ("Die Dritten") of ARD like BR, MDR, SWR to introduce 16:9 in their own production and broadcasting schemes, too.¹⁸

¹⁸ The ARD - Arbeitsgemeinschaft der Rundfunkanstalten Deutschlands - produces "Das Erste" – the first German public service programme. The ZDF – Zweites Deutsches Fernsehen – produces the second German public service programme. The so called

The second German public broadcaster, **ZDF** launched PALplus transmissions due to the fact that the station was one of the initiators of the PALplus board and hence was actively involved in the development of the PALplus standard.

German pay-TV station **Premiere** launched PALplus transmissions in response to meeting the demands of its target groups, namely the early adopters of new technologies as well as cineasts. The 16:9 format corresponded well to the vast majority of feature films Premiere was carrying in its pay-TV programme. Due to its focus on feature films, mainly from the US, 16:9 was of particular importance and interest to Premiere. These films, produced for cinema, were already originated in wide-screen format. Premiere took advantage of the 16:9 Action Plan by acquiring funds to re-master those feature films for television in 16:9. Premiere has never produced any content in 16:9 of its own, it has only re-mastered existing programme material. In 1997 Premiere has started digital transmission with a package of pay-TV channels after its competitor DF1 had started its digital pay-TV bouquet in 1996. In 1998, Premiere transmitted about 20% of its programme in 16:9 format.

Premiere and DF1 merged in 1999 creating the new trade mark "**Premiere World**". Since then, Premiere World is the only pay-TV provider in Germany with a rather large digital bouquet and a single analogue channel for offer. In spite of its focus on feature films Premiere World does not consider 16:9 the future format of television. This pessimistic view is clearly presented by the digital/analogue programming policy of Premiere World: Contents broadcast in PALplus via the analogue channel of Premiere are not broadcast in 16:9 within the digital bouquet, but in standard 4:3 in letterbox format. The main reason for this is that the digital receiver leased to the subscribers of Premiere World, the d-box, is currently not running with a software capable of 16:9.¹⁹ Maybe the next generation of d-box software will be able to handle DVB transmissions in 16:9, but currently Premiere World does not broadcast anything digitally in 16:9.

SAT.1 started recently to broadcast some feature films in 16:9 without actually using but by simulating the PALplus standards. SAT.1 uses a technical "trick": It transmits 16:9 images with standard PAL broadcasting equipment in letterbox-format by adding a special instruction signal to the standard signal for picture and sound. This additional signal instructs the viewer's 16:9 TV set to automatically zoom up the PAL-letterbox-picture to full-screen size on a 16:9 screen. Thus, the viewer gets the impression of a broadcast in PALplus, although it is only simulated. This technique works at the expense of quality, as the zoomed picture on the 16:9 screen does not even provide the resolution of a 4:3 TV set. Viewers, however, seem to be unaware of this quality loss.²⁰

This technique is a very cost-effective way to simulate wide-screen transmissions, despite the qualitative disadvantages. It allows SAT.1 to service consumers who have got a 16:9 TV set with full-screen 16:9 transmissions without the necessity to upgrade its broadcasting equipment with PALplus encoders.

"third programmes" all belong to the ARD, they contribute programme parts to "Das Erste" and produce a regional programme of their own. The name ARD is often used synonymously for "Das Erste", but it is the working group of all the regional German public service broadcasting stations: BR, hr, MDR, NDR, ORB, Radio Bremen, SR, SFB, SWR and WDR. Initially, all the third programmes were transmitted terrestrially only in their own region. Via cable and satellite, most of the regional channels are available nation-wide now.

¹⁹ Information based on an interview with Ms. Christine Landau from Premiere World on 21st July 2000.

²⁰ Information based on an interview with Mr. Günther Müllern von Schönbach, chief of the department for broadcasting execution at the Sendezentrum München, responsible for the distribution of ProSieben, Kabel1, N24 and SAT.1, i.e. the broadcasting stations of the Kirch group (10th July 2000).

The small regional broadcasting company **FAB** transmitted in PALplus for a limited time period. The lack of a strong financial background caused the company to discontinue 16:9 broadcasts after the end of the Action Plan. FAB only broadcasts in PAL in 4:3 since.

Volume of 16:9 programming

There is hardly any statistical data on the volume of 16:9 programming German broadcasters provide, with exception of public broadcaster ARD. In 1999, the 16:9 programme output of German broadcasters was:

- **3sat**: about 900 hours,
- **ZDF**: about 800 hours,
- "Das Erste" from **ARD**: about 600 hours,
 - **BR** (Bavaria) 501 hours,
 - **SR** (Saarland) 5.5 hours.
 - The other third programmes of ARD only broadcast a very small number of hours in 16:9, comparable to SR.
- **Premiere**: about 1,945 hours in PALplus.
- Except for SAT.1, all the other private TV stations did not broadcast in 16:9 at all.

16:9 broadcasting by ARD

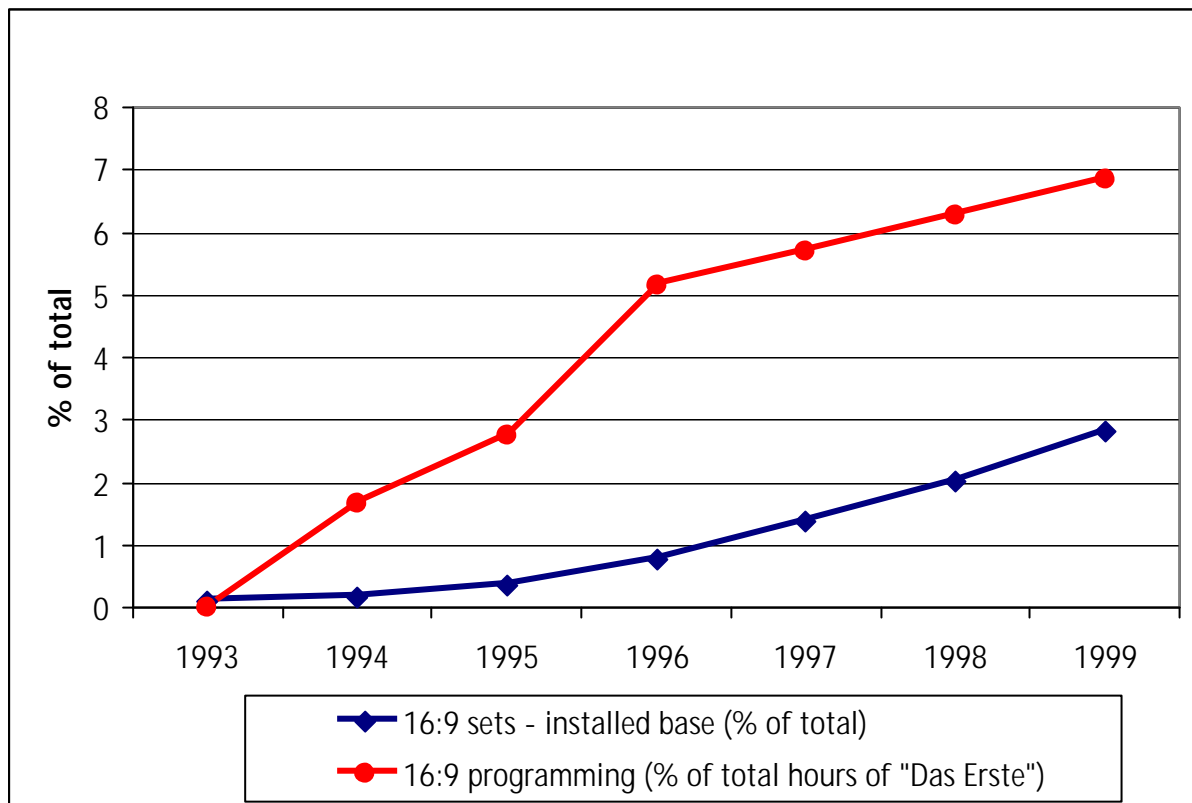
Already in 1995, Christian Blankenburg, the co-ordinator of the 16:9 Action Plan at ARD, said: "Our motto for broadcasting new productions and programmes in the 16:9 format is: The volume of 16:9 broadcasts at ARD will correspond to the market share of new sets."²¹ Indeed (see chart below), the percentage of 16:9 programming provided by ARD is higher than the market share of 16:9 sets in households. In 1999, ARD broadcast about 7 % of its total programming volume in 16:9 format.

Major productions in 16:9 format since 1997 have been the following series:

- **Tatort**: a crime series on Sundays at 20:15 (lasting about 90 minutes), about once per month
- **Polizeiruf 110**: a crime series
- **Fliege**: a talk show broadcast 4 times per week at 16:00 (with repeats at night)

²¹ Cf. Blankenburg, Christian: 16/9 Terrestrial Broadcast in Germany. In: The Widerview Report '95 – How to promote 16/9 Services?

16:9 TV sets household penetration and 16:9 programming hours of ARD



16:9 Audience

In Germany, there are no data available specifically looking at the audience of wide-screen programmes compared to the one of 4:3 programmes. Nevertheless, there is the assumption that the audience share of 16:9 transmissions might be rather high, since the majority of wide-screen transmissions is broadcast at prime time.²² As of now, it is safe to say that it is not a decisive factor for audience attention if a programme is delivered in 16:9 or in 4:3 format. The situation may change once the diffusion of 16:9 sets increases. In 16:9 households, the programme format will be more important.

Type of 16:9 programming

In the early years of 16:9 programming (starting in 1994), the most important genre for 16:9 programmes was feature films, accounting for about 40 % to 100 % of the programmes supplied by the different broadcasters in the wide-screen format. In 1995, the amount of documentaries in 16:9 increased, and in 1996, the first entertainment programmes like series and talk-shows appeared in 16:9.

However, the 16:9 format has never been used for news or information programmes, for sports programmes (with the exception of the Olympic Games in Atlanta in 1996) and for advertising. The only advertising programmes broadcast in 16:9 are trailers for feature films produced in the

²² Information based on data provided by German 16:9 broadcasters in June and July 2000.

wide-screen format. Feature films remain the most important type of content, with documentaries to follow.

The following table presents a survey of all 16:9 TV programmes transmitted by German TV channels in a period of two weeks (28th July – 11th August 2000).²³ The result is:

- During these two weeks, the German broadcasters have broadcast a total of about 17 hours in 16:9 format.
- Most of these programmes were either movies (400 minutes, 38.5 %) or documentaries (383 minutes, 36.9 %). Nearly all of them are German productions.
- All of the 16:9 programmes have been broadcast by public broadcasters. There was no 16:9 broadcast by commercial broadcasters.

Wide-screen broadcasting in Germany: 28th July 2000 – 11th August 2000				
<i>Programme genre</i>	<i>Channel</i>	<i>Title</i>	<i>Time</i>	<i>min.</i>
Feature Movies	MDR	Schade, dass du eine Kanaille bist ...	10:30 – 12:00	90
	MDR	Eine fast perfekte Scheidung	20:15 – 21:55	100
	ARD	Jonas und Lila	23:35 – 01:30	115
	3sat	Farinet	20:15 – 21:50	95
TV-Films	ZDF	Simones Entscheidung	20:15 – 21:45	90
	3sat	Lieber reich und glücklich	20:15 – 21:45	90
Popular Drama	3sat	Teletipps (weekly)	17:30 – 18:00	30
Documentaries	Bayern (BR)	Zwischen Spessart und Karwendel	18:05 – 18:43	38
	Bayern (BR)	Stationen	10:15 – 11:00	45
	Bayern (BR)	Unter unserem Himmel	19:00 – 19:30	30
	3sat	dial neues	21:30 – 22:00	30
	3sat	Schätze	21:00 – 21:15	15
	ZDF	Neues ...	01:30 – 02:00	30
	Südwest (SWF)	Inseln: Orknay	20:15 – 21:00	45
	ZDF	Neues ...	01:15 – 01:45	30
	MDR	Messe h-Moll BMW 232	22:10 – 00:10	120
Talk shows	Bayern (BR)	Münchner Runde	11:15 – 12:00	45
TOTAL				1038

As an example for the 16:9 programming of the regional public broadcasters, the following table shows a representative overview of the 16:9 programming of ORB (Ostdeutscher Rundfunk Brandenburg) since January 1997. In the year 2000, the public regional broadcaster of Brandenburg transmitted about 10-15 programmes per month in 16:9 format, mainly talk shows ("NDR talk show") and cultural & arts programmes, but only a limited number of movies and TV films.

²³ The survey is based on the TV programme guide "TV movie", which uses a special symbol to indicate programmes that are broadcast in wide-screen format. However, it is possible that some 16:9 programmes are not indicated as such by the magazine.

Examples of 16:9 programming by ORB (Ostdeutscher Rundfunk Brandenburg) from 1997 – 2000 (list is not comprehensive)²⁴

Date	Programme	Time & duration (per unit)	Remarks
July 1997	Ein Fremder ohne Namen	22:35, 101 min.	movie
1997 - 1999	NDR Talk Show	22:00, 119 min.	talk show (2-3 times per month)
1997 - 1999	FBI Academy	21:50, 43 min.	crime series (weekly)
1997	Bilderbuch Deutschland	10:00, 43 min.	documentary, 3 times in 1997
31 st Dec. 1998	(all programmes on that day)		
1999 - 2000	Unterwegs in ...	20:15, 43 min.	travel magazine, weekly
1999 - 2000	Schätze der Welt	12:30, 13 min.	educational (culture / arts)
1999 - 2000	City Express	15:00, 43 min.	weekly magazine
Sept. 1999	"Don Quixote"	11:00, 86 min.	
Oct. 1999	Die Sekretäre	22:00, 89 min.	movie
Nov. 1999	La Bartoli	22:45, 58 min.	cultural programme
Feb. 2000	Berlinale 2000		trailers, some short programmes
Feb. 2000	Heiße Westen für Ganoven	13:30, 81 min.	movie
March 2000	Hotel Shanghai	13:30, 86 min.	TV film
March 2000	Hana Bi-Feuerblume	23:30, 118 min.	movie

Promoting the 16:9 format

Promotion of the 16:9 format is virtually non-existent in Germany. None of the German broadcasters transmitting in 16:9 is actually producing special advertisements – neither in print nor for television – to specifically promote the 16:9 format. The only reference that programmes are transmitted in the wide-screen format can be found in printed TV guides where 16:9 broadcasts are marked by a small symbol (in a row with symbols for stereo-sound, Dolby surround, or originals with subtitles).

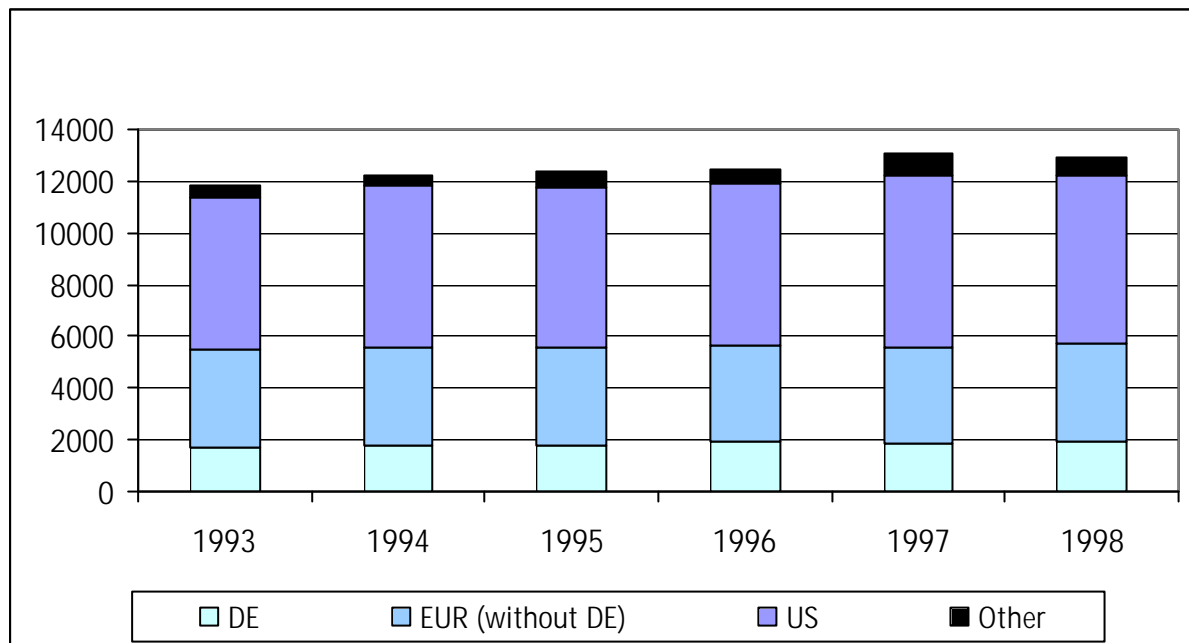
16:9 is currently not an important issue for editorial contributions to TV guides and magazines. The only sort of "promotion" are consumer tests of wide screen sets in consumer electronic magazines.

3.3 Key figures for 16:9 production

Germany is the largest television market in Europe, yet the vast majority of programmes broadcast in Germany – especially regarding feature films and series – are bought from foreign, mainly US, producers. The domestic production market and the domestic film market for cinema are not comparable to the French or Italian markets where cinema productions create a market of their own and television represents only a second level of commercial exploitation. The chart below demonstrates this in detail.

²⁴ detailed list provided by ORB, 24th July 2000

Number and origin of broadcast films



The German production market is completely dominated by productions *ordered* by broadcasting stations. Only a small number of production companies realises film productions at their own risk, without the guarantee that a broadcaster will buy the final product. The German market for feature films for cinema is underdeveloped. As productions are mainly commissioned works for TV stations, German producers do not embark on a specific strategy regarding 16:9. They realise productions in 16:9 only if explicitly ordered.

The legal representative body of the profession, the association of German TV producers (Bundesverband Deutscher Fernsehproduzenten) does not monitor the 16:9 production market, hence there are no statistics of German 16:9 productions available from the producers' association. Asked for estimates, the Bundesverband states that it is not even in a position to provide any estimates on the size of the 16:9 production market in Germany.²⁵

The editorial staff of feature film production companies clearly prefers the wide-screen format. Film directors and directors of photography favour 16:9 productions due to artistic and aesthetic reasons. They appreciate the working conditions for 16:9 television productions as they become more similar to cinema productions. They are lobbying – especially within the public service broadcasters – to realise about 80 % to 100 % of feature films for television in 16:9.²⁶

In 1999, BR produced about 300 hours in 16:9, 3sat about 400 hours, ZDF about 300 hours, etc. Premiere World did not produce in 16:9 at all, it only re-mastered cinema feature films for 16:9 transmission.

Technical production systems

In 1994 and 1995, the majority of productions in 16:9 was produced on 35 mm film or Super16. In the following years, there was a shift to productions on video, i.e. Digital Betacam. Today,

²⁵ Fax statement by the "Bundesverband Deutscher Fernsehproduzenten" from 13th June 2000.

²⁶ Information based on an interview with Mr. Christian Blankenburg from ARD on 27th June 2000.

there are almost no television productions realised on 35 mm film anymore, while the vast majority is produced on Digital Betacam and Super16 film.

The main reason for the implementation of wide-screen video is the technical development of 16:9 video cameras and recording technology. Super16 is still preferred to video by a lot of editors and film producers, and can only therefore preserve a small percentage of the total production. The "Tatort", for example, a crime series produced by ARD in co-operation with the ORF (Austria), was already produced on Digital Betacam – in the meantime, after intervention and criticism from the editorial staff, it is produced on Super16 film again.²⁷

4. Analysis of drivers and impediments to the adoption of the 16:9 format since 1993

4.1 The determinants of consumer demand for wide-screen TV receivers

Volume of content available in 16:9 format

"Content is King", that means that programmes broadcast in 16:9 are the key driver for consumer demand. The problem is that the "chicken and egg" problem has not been solved in Germany yet. As long as broadcasters do not produce and broadcast enough premium content in 16:9 format, and as long as 16:9 TV means black stripes on the left and right side of the wide-screen TV set for the majority of programmes, i.e. 4:3 programmes, the willingness of consumers to change to the 16:9 format will remain limited. In 1999, apart from SAT.1 no German private free-TV station broadcast in 16:9. Especially RTL, the biggest private TV station did not broadcast in 16:9 at all. Only 3sat, ARD, BR and ZDF broadcast a remarkable number of hours in 16:9, but only 2.8 % of all TV households were equipped with a 16:9 set.

Prices for 16:9 sets

Another factor are the prices for 16:9 sets. Retailers expect that high-end wide-screen TV sets will become cheaper over the next 2-3 years. As of now, a 4:3 set is still cheaper than a 16:9 set of the same size. There is already a large variety of multiple brands and models of wide-screen TV sets available. Virtually every manufacturer offers 16:9 sets with different specifications, and every retail store displays a number of 16:9 receivers. But consumers seem to wait for sets to become cheaper.

DVD players and other digital equipment as drivers for 16:9 TV

DVD-players, Dolby-Surround-Systems and video-beams (for home theatres) could be drivers for the diffusion of 16:9, but it is too early to have definite empirical evidence for their impact on sales. At this point in time, it is the domain of early adopters and high-income groups to make "all-in-one" purchases. These target groups are found to increasingly buy DVD players and 16:9 sets in one go, as retailers report.

²⁷ Information based on an interview with Mr. Felsch from SFB on 23rd June 2000.

Video-recorders, analogue satellite-receivers and (home-)video-cameras, on the other hand, do not drive 16:9. Digital satellite-/cable-receivers are considered to support 16:9 partly, but they are not considered major drivers.²⁸

4.2 The determinants of supply: strategy of the main national market players with regard to 16:9 format

4.2.1 Strategies of the main broadcasters

With the exception of pay-TV operator Premiere and the private regional broadcaster FAB, only the public broadcasters participated in the 16:9 Action Plan. For public broadcasters, 16:9 broadcasting was an opportunity to underline their position as technical leaders in Germany and to differentiate themselves in qualitative terms from the commercial broadcasters.

For ARD and ZDF, the launch of PALplus was essential. First, they would never have realised 16:9 transmissions in D2-MAC due to the disadvantages of this standard (e.g. it is not compatible with PAL, and not capable of terrestrial transmission). Second, there was great demand for an interim compatible analogue solution to bridge the gap to 16:9 in DVB.

The philosophy of the public broadcasters was expressed by Siegfried Werz from the BR, the Bavarian public service channel, in 1995: "Compatibility with all the sets existing on the market is the most cost-effective solution and, for public broadcasters, the only way of supporting new programme broadcasting standards such as DVB, since parallel broadcasting is only required from the transmitter to the viewer. On the other hand, the costs of parallel links for 16:9 and 4:3 from the programme source, that is a live transmission from the stadium via all feeder and distribution circuits to the viewer using PAL 4:3 and, for example, DVB 16:9, would incur unacceptably high costs. To this extent, using the 16:9 aspect ratio today is paving the way for the future of television."²⁹

In 1996, PALplus transmissions – and thus indirectly also the 16:9 programmes – were actively promoted through an Info-Page and a list of all PALplus programmes available for the current and next day in the teletext tables of **ARD** and **ZDF**. However, this teletext Info-Page was discontinued at the end of 1996. There was also a monthly overview of PALplus transmissions including the PALplus broadcasts of Premiere which viewers could call by fax.

Other than this, 16:9 programmes were only promoted through a special trailer referring to the fact that the broadcast was partly funded through the EC's 16:9 Action Plan. These programmes were announced as follows: "With the support of the 16:9 campaign of the European Union." It can be doubted if this meant anything to the viewers and if they were able to see the connection to PALplus. Even the insert of a PALplus emblem would not make it clear that full picture quality is attained only with TV sets with a PALplus decoder. It can be speculated that many viewers assumed the credit to be a sponsor advertisement.

²⁸ Information based on data provided by German retailers in June and July 2000.

²⁹ Cf. Werz, Siegfried: Change to 16/9: a Benefit for the Viewer? In: The Widerview Report '95 – 16/9 Programming and Format Management.

Premiere, in its position as a broadcaster of premium feature films, had a declared interest in 16:9. The pay-TV station therefore developed the PALplus logo as a distinct reference to its special service. In 1999 Premiere World was the leading broadcasting station regarding the number of hours broadcast in 16:9 (via analogue transmission). On the other hand Premiere World does not broadcast digitally in 16:9 at all.

ZDF was a major proponent of PALplus and therefore claimed massively for a prolongation of the Action Plan. ZDF criticised measures for cutting down funds. After the cancellation of funding for flow-programmes at the beginning of 1996, most of the editorial staff from ZDF withdrew their plans to start or even continue wide-screen programmes. This resulted in a considerable reduction of 16:9 broadcasting hours in ZDF in 1996, which by then were, essentially, funded stock programmes.

The broadcast of popular events in 16:9

As history demonstrates, one of the major strategies to effectively introduce new technologies to the market and boost household penetration was the broadcast of major sports events. In Germany, for example, colour television, although introduced first in 1967, really took off with the Olympic Games in Munich (1972). The decision to broadcast this event in colour boosted sales of colour TV sets enormously.

With regards to 16:9 television, the supporting broadcasting stations also wanted to benefit from the opportunity to enhance the acceptance for wide screen TV by broadcasting a major sports event in the new format. As a result, ZDF formed a consortium of European broadcasters to produce the European part of the **1996 Olympic Summer Games** in Atlanta in 16:9 using PALplus to be transmitted in eight European countries. This plan was realised with major funding from the 16:9 Action Plan. However, the 1996 Olympic Summer Games remained the only major sports event transmitted in 16:9 with the superior quality of PALplus, partly due to the fact that the Action Plan ended soon after the Games.

On 7th March 1997, **Eurosport** started to broadcast sports events in 16:9. The Freestyle FIS-Worldcup as well as reports on the Snowboard FIS-Worldcup in French Avoriaz were transmitted in wide-screen, yet the broadcasts were only transmitted in PAL in letter-box format and not as PALplus productions. In the meantime Eurosport has ceased any initiative to launch transmissions of sports events in wide-screen format.

The Olympic Winter Games in Nagano 1998 were recorded and broadcast by NHK, the Japanese public service broadcaster, together with some private Japanese broadcasting stations completely in HiVision, the Japanese HDTV-system. Although it would have been easy to convert the HDTV-signal downwards to 16:9 PALplus, ARD and ZDF, which held the rights for broadcasting the Olympic Games in Germany, only bought a 4:3 NTSC-signal. Then they converted it to 4:3 PAL, since a conversion to a 16:9 PALplus signal from 4:3 NTSC would not have made sense. ARD and ZDF argued that there would have been problems in financing the more expensive transmission feed, but the consumer electronics industry would have provided additional funds.³⁰ In return for this support the industry wanted to get a long-term promise of broadcasts in PALplus, but ZDF as leading broadcaster did not want to assure that.³¹ So the Olympic Games in Nagano were broadcast in 4:3, although all the Games were recorded in 16:9 in Japan.

³⁰ Information based on an interview with Rainer Hecker on 18th July 2000.

³¹ See: N. N.: Olympia 1998: Marathon in Sachen HDTV. In: FILM&TV KAMERAMANN, 2/1998, p. 38 – 50.

In contrast to their original plans, ARD and ZDF did not transmit the **Football World Championship 1998** in France in 16:9. Much to the displeasure of the German consumer electronics manufacturers who accused the German public service broadcasters of only being willing to produce high-quality content if funded through the Action Plan. ARD and ZDF, however, argued that a 16:9 transmission would have – besides causing extra costs – annoyed the 4:3 audience due to the black stripes on top and bottom of 4:3 sets.³² A transmission of this football event might have been a catalyst for the market penetration with 16:9 TV sets.

In 1996 – two years before the world championship in France –, Christian Blankenburg from ARD had declared the position of the German public broadcasters regarding the transmission of football events in 16:9: "I am sure that the German viewers will have to be convinced gradually about the usefulness of such a format for sports events. One can't demand too much at the beginning because their favourite sport is soccer, and we do not want them to be obliged to watch their favourite sport with letter box stripes."³³

Sports programmes could be a "killer application" for 16:9 TV in the future. As in other European countries, football will be an essential content in Germany to popularise 16:9 broadcasting. Other important sports events are Formula 1 and the Olympic Games. If these events take place in 16:9 format, it will be a milestone for 16:9 TV.

4.2.2 Manufacturers and retailers: promotion and marketing of 16:9 and analysis of difficulties

In Germany, there has been a trend in recent years to enlarge the retail areas in stores, whereas the importance of the sales personnel diminishes. Direct contact to customers and sales conversations increasingly lose importance and are now often limited to the actual purchase of a product. As a result, consumers' decisions to purchase a 16:9 TV set are rather influenced by the number of 16:9 devices displayed in the sales room than by conversations with the sales personnel.

About 75 % of the sales value of TV sets in Germany is realised by buying groups (43 %) and chain stores (33 %).

It is clear that the concepts of new technologies like PALplus or DVB are less obvious than, for example, the advantage of colour TV to black-and-white. These features are not easily to be illustrated and demonstrated to the consumer. The fact that 16:9 television does mean more than the larger width of the screen does not stick with most consumers. For consumer electronics retailers, it is even difficult to demonstrate the impression of 16:9 pictures since the vast majority of 16:9 broadcasts is running in the evening and not during day times when consumers usually make their purchases. In some stores, the 16:9 TV sets displayed and in operation are fed with live-broadcasts zoomed up from 4:3 to 16:9. This is a questionable method since the stretched pictures, sometimes even with parts cut off, may produce a distorted image.

There are nearly no advertising spots broadcast in wide screen/PALplus. At the end of 1996 Thomson employed a number of 16:9 adverts for its image campaign, but only ZDF broadcast advertisements in PALplus format.

³² See: N. N.: öRA's übertragen Fußball-WM nicht im Breitbildformat. In: INFOSAT, 3/1998, p. 124.

³³ Blankenburg, Christian. Quoted in: The Wideview Report '95 – How to promote 16/9 services, p. 24

4.3 The role of other major players in Europe

Except Canal+, which was holding a 37.5 % share in the pay-TV station Premiere when the 16:9 Action Plan was launched, none of the other major European players had an influence in the German 16:9 market. Premiere, however, was the first German broadcaster to transmit programmes in the 16:9 format in January 1994. The broadcaster participated in the Action Plan in the years from 1993 - 1995, focusing not on new productions but re-mastering especially US feature films in 16:9.

5. Conclusions and assessment of the 16:9 Action Plan impact in Germany

The vast majority of the players – including broadcasters, manufacturers, retailers and consumer associations – is convinced that 16:9 will be the television format of the future. However, the pace of innovation, i.e. the diffusion of 16:9 equipment and programming, is not a fast one, but takes more time than anticipated. Many signals at the IFA (International Broadcasting Fair) 1995, for instance, had suggested that the market take-off for 16:9 in PALplus was to be expected for the very near future. The problem obviously is how to overcome the "chicken-and-egg" dilemma, i.e. the question who will go first: consumers or broadcasters?

In the beginning, the European Commission's 16:9 Action Plan was an important incentive for German broadcasters to implement 16:9 broadcasting equipment. The Action Plan had considerable impact on broadcasting infrastructure and technology in Germany. Equipment purchased and implemented by broadcasters during the Action Plan period is still in use after the end of the Action Plan.

Although the Action Plan has triggered 16:9 as an issue in the German broadcasting landscape, its impact in quantitative terms has been modest up to now.

- Except Premiere and Sat.1, none of the commercial broadcasters transmits programme in 16:9 format. Premiere, a former forerunner in 16:9 programming, has changed its policy. The digital channels of Premiere World do not broadcast in 16:9, but in standard 4:3 in letterbox format, since the d-box is currently not running with a software capable of 16:9.³⁴
- Even the public broadcasters, who consider themselves as innovators in 16:9 television, broadcast only a small percentage of their total programme volume in 16:9. ARD broadcasts 550 hours in 16:9 annually (1999), and ZDF 800 hours, i.e. about 7-9 % of the total volume.
- About 3 % of all German TV households are equipped with a 16:9 TV set. About 6 % of all units sold today are 16:9 sets.

Movies and documentaries are the dominant programme genres for 16:9 television. The Action Plan has never been an incentive to produce major sports events in 16:9 (except for the Olympic Summer Games of Atlanta, 1996). Manufacturers argue that sports could be the "killer application" (i.e. programme) for a final breakthrough of 16:9 television.

A new impetus for 16:9 television may come from new digital equipment, especially from DVD players and Dolby-Surround-Systems. Since DVDs significantly increase the amount of content offered in 16:9 format, the incentive for consumers to purchase a 16:9 set will also increase. Retailers confirm that the consumers' timing to "upgrade" their TV set to 16:9 often goes hand in hand with the purchase of a DVD player. As DVDs start to replace video cassettes in the rental market as well as in the pay-market, consumers may get new motivation to switch to 16:9 television will increase over the next 3 years, and this may drive broadcasters to reconsider their 16:9 strategies. It is likely that DVD technology – rather than the broadcasters themselves – will be the driving forces for 16:9 television.

If so, the most likely scenario for the further 16:9 development is a gradual change. For now, the target groups for 16:9 television are early adopters, enthusiasts and high-income groups. The EC Action Plan was the very first step and incentive to trigger this development. But it will take a couple of more years before 16:9 will be back as a more significant issue in the German debate on television than it is now.

³⁴ Information based on an interview with Ms. Christine Landau from Premiere World on 21st July 2000.

6. Key figures for the German market

6.1 Country fundamentals

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Population (millions)	79,364	79,984	80,594	81,179	81,422	81,661	81,896	82,052	82,024	82,037	
Households (millions)					36,812	36,938	37,281	37,454	37,824	37,824	
GDP (in Euros billions)	1483,14	1554,99	1782,76	1730,46	1854,68	2172,45	2117,52	1889,94	1942,60	1982,33	

6.2 Household equipment

<i>As of 31 of December</i>	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TV households (millions)	26,616	27,226	27,75	34,748	35,158	35,615	35,862	36,334	37,416	37,633	
TV HH (% of total households)					95,51%	96,42%	96,19%	97,01%	98,92%	99,50%	
TV Households with 2 TV sets or more (millions)					9,900	11,041	12,193	13,262	14,313		
TV Households with 2 TV sets or more (% of TV HH)					28,16%	31,00%	34,00%	36,50%	38,25%	42,50%	
TV Households with 16:9 Television sets (millions)	0,000	0,000	0,000	0,014	0,035	0,089	0,226	0,454	0,737	1,065	
TV Households with 16:9 Television sets (% of TV HH)	0,00%	0,00%	0,00%	0,04%	0,10%	0,25%	0,63%	1,25%	1,97%	2,83%	3,80%
VCR HH (millions)	15,253	17,414	19,449	21,345	23,292	25,183	26,944	28,494	30,023		
VCR HH (% of TV HH)	57,31%	63,96%	70,09%	61,43%	66,25%	70,71%	75,13%	78,42%	80,24%		
DVD HH (millions)											
DVD HH (% of TV HH)											
Digital STB HH (millions)	0	0	0	0	0,000	0,000	0,015	0,220	0,662		
Digital STB HH (% of TV HH)	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,04%	0,61%	1,77%		
IDTV HH (millions)											
Digital HH (millions)	0	0	0	0	0,000	0,000	0,015	0,220	0,662		
Digital HH (% of TV HH)	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,04%	0,61%	1,77%		

6.3 Consumer electronics market

<i>As of 31 of December</i>	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TV sets sales in volume (thousands)				5189,70	5243,10	4915,70	4934,00	4753,60	4922,30	4984,80	5738,00
TV sets sales in value (millions)				2886,80	2932,43	2839,80	2725,73	2481,49	2502,00	2457,40	
16:9 TV sets sales in volume (thousands)				14,30	18,10	49,60	126,40	202,10	239,20	281,20	400,00
16:9 TV sets sales in value (millions)				27,86	28,74	75,59	189,73	281,15	320,60	372,70	
16:9 TV sets sales in volume (% of TV sets sales)				0,28%	0,35%	1,01%	2,56%	4,25%	4,86%	5,64%	6,97%
screen size below 24" (% of 16:9 TV sets sales in volume)				0%	0%	0%	6%	4%	3%	2%	
screen size 24 - 26" (% of 16:9 TV sets sales in volume)				0%	0%	0%	4%	4%	3%	0%	
screen size 27 - 29" (% of 16:9 TV sets sales in volume)				45%	57%	53%	51%	49%	46%	34%	
screen size above 29" (% of 16:9 TV sets sales in volume)				55%	43%	47%	39%	42%	49%	64%	
4:3 TV sets average price				552,41	555,73	568,05	527,50	483,43	465,80	443,21	
16:9 TV sets average price				1948,00	1588,00	1524,00	1501,00	1391,15	1340,30	1325,39	
DVD sales volume (thousands)									60,00	150,00	
DVD sales in value (millions)											

6.4 Hours produced in 16:9 by broadcasters/by order of broadcasters

<i>As of 31 of December</i>	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
public service broadcasters:											
3Sat	0	0	0	0	300	500	500	400	400	400	400
ARD (Das Erste)	0	0	20	20	50	100	230	250	260	270	280
Arte											
BR	0	0	0	0	18	160	300	350	150	300	350
BR-alpha	-	-	-	-	-	-	-	-	-	-	-
Deutsche Welle	0	0	0	0	0	0	0	0	0	0	0
Hessen Fernsehen											
Kinderkanal	0	0	0	0	0	0	0	0	0	0	0
MDR											
NDR											
ORB											
Phoenix	0	0	0	0	0	0	0	0	0	0	0
Radio Bremen											
SFB											
SR											
SWF											
WDR											
ZDF	0	0	0	75	150	250	250	250	300	300	300
private broadcasters:											
Bloomberg TV	0	0	0	0	0	0	0	0	0	0	0
DSF	0	0	0	0	0	0	0	0	0	0	0
Eurosport	0	0	0	0	0	0	0	0	0	0	0
FAB										0	0
H.O.T.	0	0	0	0	0	0	0	0	0	0	0
Kabel 1	0	0	0	0	0	0	0	0	0	0	0
MTV	0	0	0	0	0	0	0	0	0	0	0
N24	0	0	0	0	0	0	0	0	0	0	0
n-tv	0	0	0	0	0	0	0	0	0	0	0
Onyx Musiv Television	0	0	0	0	0	0	0	0	0	0	0
Premiere (World)	0	0	0	0	0	0	0	0	0	0	0
ProSieben	0	0	0	0	0	0	0	0	0	0	0
QVC	0	0	0	0	0	0	0	0	0	0	0
RTL	0	0	0	0	0	0	0	0	0	0	0
RTL2	0	0	0	0	0	0	0	0	0	0	0
Sat1											
SuperRTL	0	0	0	0	0	0	0	0	0	0	0
tm3	0	0	0	0	0	0	0	0	0	0	0
VH-1	0	0	0	0	0	0	0	0	0	0	0
VIVA	0	0	0	0	0	0	0	0	0	0	0
VIVA II	0	0	0	0	0	0	0	0	0	0	0
VOX	0	0	0	0	0	0	0	0	0	0	0

6.5 Hours broadcast in 16:9

<i>As of 31 of December</i>	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
public service broadcasters:											
3Sat	0	0	0	0	300	649	649	900	900	900	900
ARD (Das Erste)	0	0	20	20	128	240	450	500	550	600	650
Arte										464	
BR	0	0	0	0	34	270	610	583	397	501	768
BR-alpha	-	-	-	-	-	-	-	-	250	250	300
Deutsche Welle	0	0	0	0	0	0	10	20	50	70	90
Hessen Fernsehen											
Kinderkanal	0	0	0	0	0	0	0	0	0	0	0
MDR											
NDR											
ORB											
Phoenix	0	0	0	0	0	0	0	10	50	70	90
Radio Bremen	0	0	0	0							
SFB	0	0	0	0	0	0	0				
SR	0	0	0	0	0	0	2	2	2	6	16
SWF											
WDR											
ZDF	0	0	0	100	200	717	866	800	800	800	800
private broadcasters:											
Bloomberg TV	0	0	0	0	0	0	0	0	0	0	0
DSF	0	0	0	0	0	0	0	0	0	0	0
Eurosport	0	0	0	0	0	0	0	0	0	0	0
FAB										0	0
H.O.T.	0	0	0	0	0	0	0	0	0	0	0
Kabel 1	0	0	0	0	0	0	0	0	0	0	0
MTV	0	0	0	0	0	0	0	0	0	0	0
N24	0	0	0	0	0	0	0	0	0	0	0
n-tv	0	0	0	0	0	0	0	0	0	0	0
Onyx Musiv Television	0	0	0	0	0	0	0	0	0	0	0
Premiere (World)	0	0	0	0	1185	1980	2265	2250	1920	1945	1650
ProSieben	0	0	0	0	0	0	0	0	0	0	0
QVC	0	0	0	0	0	0	0	0	0	0	0
RTL	0	0	0	0	0	0	0	0	0	0	0
RTL2	0	0	0	0	0	0	0	0	0	0	0
Sat1											
SuperRTL	0	0	0	0	0	0	0	0	0	0	0
tm3	0	0	0	0	0	0	0	0	0	0	0
VH-1	0	0	0	0	0	0	0	0	0	0	0
VIVA	0	0	0	0	0	0	0	0	0	0	0
VIVA II	0	0	0	0	0	0	0	0	0	0	0
VOX	0	0	0	0	0	0	0	0	0	0	0

B. 16:9 wide-screen TV in Austria

7. Introduction

This is a report about the market development of 16:9 television in Austria. It describes the technological, economic and political background of the 16:9 history, the diffusion of 16:9 TV sets, the programme output and the strategy of Austrian broadcasters. The report contributes to an evaluation of the 16:9 Action Plan of the European Commission performed by IDATE, France.

7.1 Methodology

The report is based on media statistics provided by GfK, EACEM and EAO, and on interviews and a questionnaire survey of players in the television market. Twelve businesses and organisations including broadcasters, retailers, producer + consumer associations and EC representatives in Austria have been contacted and asked to provide data and information. Telephone interviews were conducted with Mr. Andreas Ulrich from the Austrian Federal Chancellery, who was a national EC representative to the Action Plan management committee, and Mr. Srna from the Austrian Consumers Association ("Verein für Konsumenteninformation"). Important input comes from 56 further contacts (questionnaires, interviews) with players in the German television market (see report on German development), since some of the developments in Austria have been parallel to the German 16:9 history. It is recommended to read this report combined with the report for Germany.

7.2 Summary analysis and key findings

- a) The EC Action Plan was an important incentive for ORF. It submitted a lot of proposals, most of which were successful. Also, ORF implemented 16:9 broadcasting equipment due to the Action Plan.**

If Austria had not joined the European Union in 1995, and if there had not been the Action Plan, ORF probably would not have started to broadcast in 16:9. In 1996 and 1997, ORF submitted a lot of proposals for Action Plan support mainly addressing culturally valuable stock programmes like the transmission of operas and dramas. Nearly all of these proposals were granted financial support.

The Action Plan had considerable impact on the broadcasting infrastructure and technology in Austria. Equipment purchased and implemented by ORF and private producers during the Action Plan period is still in use after the end of the Action Plan.

- b) The history of 16:9 TV in Austria is – to a large extent – the history of PALplus.**

The initiative to improve the existing PAL-system (which was originated in Germany in the 1960s) was mainly carried by the public broadcasters all over Europe, under the leadership of German public broadcaster ZDF and with ORF as a member of the PALplus board from the

very beginning. German broadcasters were able to quickly advance their plans to start PAL-plus broadcasting in early 1994 as a direct result of the 16:9 Action Plan, while it lasted until 1996 that ORF launched PALplus programmes. This delay was caused by the fact that ORF could not participate in the first calls for proposals of the Action Plan, since Austria did not join the European Union until 1995.

- c) The diffusion of 16:9 television takes more time than anticipated. ORF is transmitting only about 1.3 % of its programme in wide-screen format. As a consequence, consumers are hesitating to purchase 16:9 TV sets.**

16:9 TV sets were commercially launched in Austria in 1994. In 1995, about 0.8 % of the total annual sales were wide-screen television sets. The market share of 16:9 sets in terms of units sold has increased to 6.4 % (1999) since. In total, about 3 % of all TV households were equipped with a 16:9 set at the end of 1999. Most retailers believe that the future of TV is 16:9, but it will take time for the market to take off.

The reason for the slow market development is that the "chicken and egg" problem has not been solved in Austria yet. Broadcasters do not produce and broadcast enough premium content in 16:9 format that would create a consumer demand for 16:9 TV sets. Especially most of the popular sports events are still produced in 4:3. Broadcasters are afraid to annoy their 4:3 audience by transmitting in 16:9 (black stripes on the screen).

- d) In spite of the slow development, and although they cannot compensate for the decreasing sales value in the 4:3 market yet, 16:9 TV sets are regarded as a future growth market for the Austrian consumer electronics trade. Especially the growing DVD market could be a new incentive for 16:9 sets.**

Sales of 4:3 TV sets decreased by about 30 % from 1994 to 1999 in Austria. In this difficult business environment, wide-screen TV sets were considered a future hope market for retailers of consumer electronics. Indeed, although the percentage of 16:9 sets sold is still below 10 % of the total number, wide-screen sets already account for about 18 % of the sales value and are regarded as an important growth market.

Sales of DVD players and sales and rentals of DVDs developed momentum in 1998. The majority of Austrian retailers consider the DVD boom to be a driving force for wide-screen TV sets sales, since it increases the content available in 16:9 format.

8. Background information: 16:9 national history and key dates

Since Austria did not join the European Union until 1995, it did not take part in the EC's 16:9 Action Plan from the beginning. Also, there were no Austrian players involved in the EU directive of 1986 regarding the launch of the MAC-standards, nor in the consultations regarding wide-screen television at the beginning of the 1990s. In some other fields of European audio-visual policy, however, e.g. the MEDIA-programme, Austria had already participated in informal meetings before joining the European Union. The 16:9 Action Plan became relevant for Austria only in 1995.³⁵

The Austrian television market is characterised by the dominant position of ORF, the public service broadcaster, who still holds a monopoly in terrestrial broadcasting. There was no commercial broadcasting at all until 1997, when first steps of a liberalisation of the television market became effective and provided for private broadcasting via satellite and cable networks. However, as of today, there is no commercial Austrian competitor to the ORF broadcasting nation-wide.

As the programmes of ORF have never been broadcast via analogue satellite, the discussions about the MAC-family were not relevant for ORF. The public service broadcaster did not take part in any HDTV initiative. Terrestrial and cable transmissions of ORF in standard PAL have been state of the art until today. The only initiative the ORF took part in was the PALplus board (see: report on German 16:9 history). ORF joined the PALplus group from the very beginning in 1989 and took part in the work of the initiative, but it did not have a leading role. ORF was the only Austrian member of the PALplus board.

Although ORF had a long-term monopoly from a supply side perspective, it has 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 has made a multitude of free-to-air programmes available in Austria, mainly German language programmes. Today, more than two thirds of all Austrian households are cable or satellite TV households that receive at least 20 free-to-air TV programmes, including all major German channels. These programmes compete against ORF for audience shares, and – increasingly – for advertising budgets. For German commercial broadcasters, Austria is a potential add-on to the German market. 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.

For these reasons, the history of 16:9 television in Austria cannot be separated from the developments in Germany.

ORF was the main Austrian player and stakeholder in the 16:9 Action Plan. In a very limited way, a number of independent production companies were effected by the Action Plan, as they produced in 16:9 by order of ORF. Nobody else played an important role regarding the 16:9 Action Plan in Austria.

³⁵ Information based on an interview with Mr. Andreas Ulrich, former national representative to the management committee of the Action Plan, on 12th July 2000.

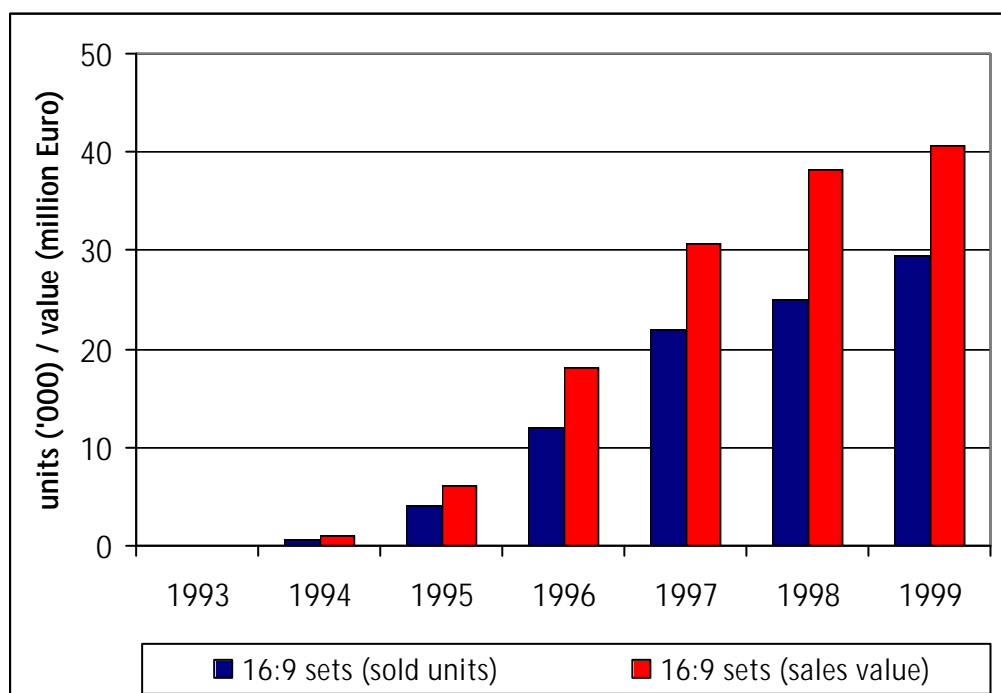
In contrast to Germany, there has never been any industrial policy pushing the development of 16:9 TV in Austria, mainly because there are no domestic manufacturers of TV sets in Austria. The German manufacturer Grundig is assembling TV sets in Austria, and Philips is producing single components for television devices.³⁶ Both production sites are important in terms of their industrial and economic role, but there has not been any visible lobbying for 16:9 TV in Austria which could be contributed to the presence of these sites.

9. The 16:9 market evolution: facts and figures

9.1 Key figures and statistics for wide-screen TV sets sales

Already in 1994, the first 16:9 TV sets were sold in Austria, simultaneously to the launch of 16:9 TV broadcasts in the German market, although ORF did not start wide-screen transmissions before 1996. The only programmes available in 16:9 format at that early stage of the 16:9 history were German ones. Over the following years, the sales of 16:9 TV sets increased steadily, but not at fast pace. In 1999, about 30,000 wide-screen TV sets were sold with a total value of 45 million Euro. The forecast for the year 2000 is that 40,000 units will be sold by the end of the year.

Sales of 16:9 TV sets in Austria: units sold (shipment) and sales value (in Euro)



³⁶ Information provided by Mr. Rosenkranz from the association of the Austrian electrical and electronics-industry (FEEI = "Fachverband der Elektro- und Elektronikindustrie Österreichs") on 17th July 2000.

Sales of 16:9 TV sets

(Austria)

units shipped ('000)

	1993	1994	1995	1996	1997	1998	1999
16:9 sets (sold units)	-	1	4	12	22	25	30
4:3 sets (units)	533	549	523	477	435	461	432
Total TV sets (units)	533	549	527	489	457	486	461
Index 16:9 (1996=100)	-	6	33	100	183	208	246
Index 4:3 (1996=100)	112	115	110	100	91	97	91

sales value (million Euro)

	1993	1994	1995	1996	1997	1998	1999
16:9 sets (sales value)	-	1	6	18	31	38	41
4:3 sets (sales value)	294	305	297	252	210	215	186
Total TV sets (value)	294	306	303	270	241	253	226

The compound annual growth rate (CAGR) of 16:9 sets shipped to Austrian retailers between 1996 and 1999 was 36 %.³⁷ This corresponds to the CAGR of the sales value in the same period (32 %). The anticipated growth for 2000 is 25% compared to 1999.

This steady increase in sales of 16:9 TV sets, which are more expensive than 4:3 sets, has happened at a time when sales of 4:3 TV sets decreased substantially:

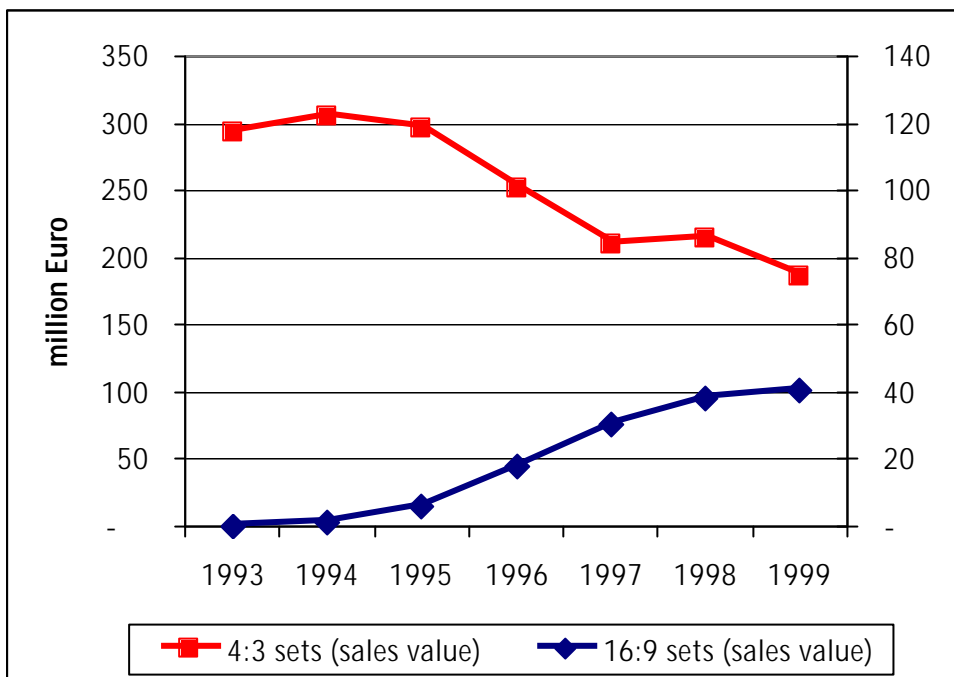
- The value of 4:3 TV set sales dropped from close to 300 million Euro in 1995 to 210 million Euro in 1997, a slump of nearly 30 %. This decline can partly be explained by the general price decrease in consumer electronics. The difficult overall economic situation during these years may also have contributed to a decrease in consumer expenditures on TV sets.
- The sales of 4:3 TV sets also decreased in terms of units sold, albeit not as dramatically as the sales value. In 1999, the shipment of 4:3 sets to Austrian retailers was about 10 % lower than in 1996 (see index in table above) and 15 % lower than in 1994.

Sales of 16:9 TV sets cannot compensate for the decline in the sales of 4:3 sets yet (CAGR of sales value between 1996 and 1999: -5.8 %). A simple extrapolation of the trend of the past 3 years (based on the CAGR of sales values) does not suggest that the negative trend in the total sales value can be stopped within the next 2-3 years. The following factors will significantly influence the market development for sales of TV sets:

- The general economic environment seems promising at this point in time. The Austrian Institute of Economic Research has recently revised its forecast for growth of GDP for 2000 towards an even more optimistic estimate. Total consumer expenditure will probably increase.
- Consumer electronics is trendy. High end TV sets are status symbols for those who can afford it.
- Competition will make prices for wide-screen sets drop considerably. The average price per set will be lower in the future and put even more pressure on the profit margin for retailers. This is a positive effect for consumers, but less so for CE retailers.

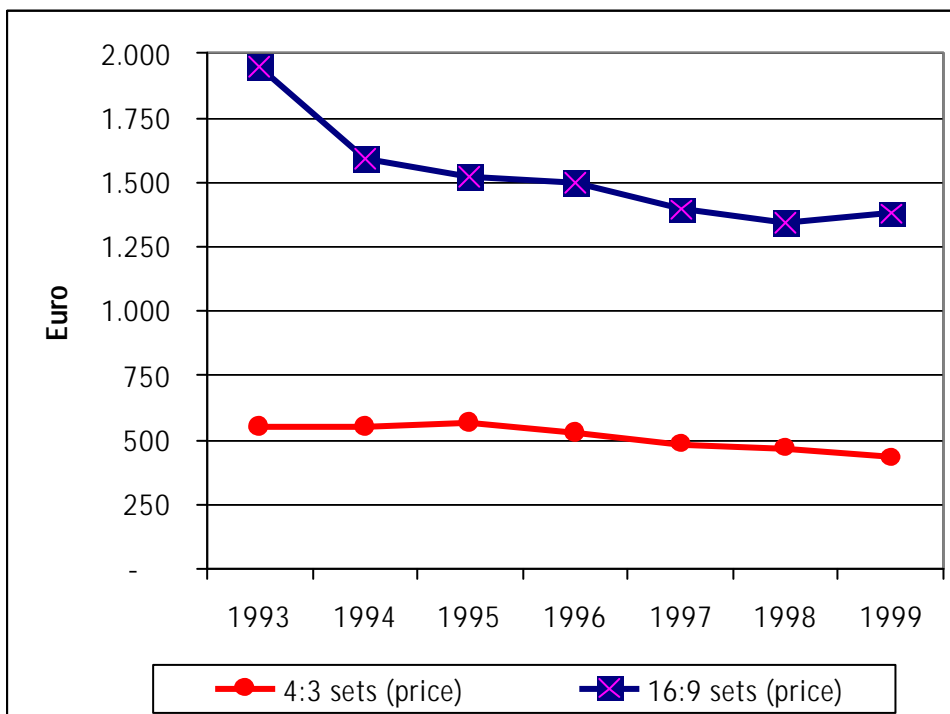
³⁷ It does not make sense to discuss growth rates from an earlier base, since hardly any sets were sold in 1994 and 1995. For this reason, 1996 has been selected as the basis for the index in the related tables.

Sales of TV sets in Austria: sales value of 4:3 sets compared to 16:9 sets



In 1999, an average 16:9 TV set still cost nearly three times as much as an average 4:3 set. This figure, however, has limited significance, as the comparison includes a large number of small, portable 4:3 TV sets without any 16:9 counterpart. If only sets with the same screen size are compared, the difference between average prices for 4:3 and 16:9 amounts to 150 – 500 Euro.³⁸

Average price of TV sets in Austria: 4:3 sets compared to 16:9 sets (in Euro)



³⁸ Data based on information provided by Austrian retailers in June and July 2000.

	1993	1994	1995	1996	1997	1998	1999
4:3 sets (price)	552	556	568	528	483	466	430
16:9 sets (price)	1.948	1.588	1.524	1.501	1.391	1.340	1.376
4:3 as percent of 16:9	28%	35%	37%	35%	36%	36%	31%

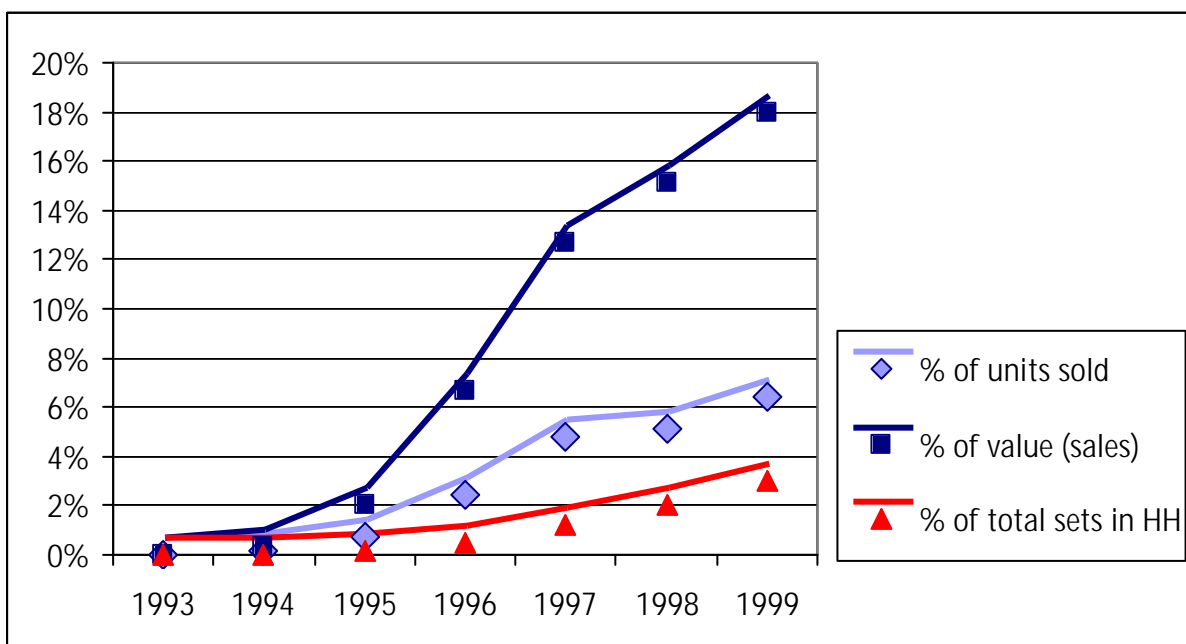
About 80 % of the sales value of TV sets in Austria is realised by chain stores (46 %) and buying groups (33 %).

- The most important chain stores in Austria are MediaMarkt / Saturn, Cosmos, Niedermayer and Hartlauer. These chains have boomed since the 1990s and dominate the retail market today. They are "price breakers" competing with each other mainly via special offers and aggressive advertising.
- The most important buying groups in Austria are Expert, Ruefach, Electronic Partner and Funkberater. In contrast to the chain stores, these retailers promote their customer service rather than the cheapest price. Competitive pressure from the large stores has increased enormously over the last 5-8 years.

The result of the sales history of 16:9 sets in Austria is that the household penetration has increased to about 3 % of TV households in 1999. It was not before 1997 that 1 % of the television households were equipped with 16:9 TV sets.

The diffusion of 16:9 sets is likely to take some more time before taking off. Even today, the percentage of 16:9 sets sold in stores is below 10%, according to Austrian retailers and to sales statistics. In 1999, about 6 % of all TV sets sold in 1999 were 16:9 sets. However, these sales already accounted for about 18 % of the revenues generated by sales of TV receivers. This makes it clear why manufacturers of TV sets as well as retailers have a strong interest in the expansion of the Austrian 16:9 market, which means selling high-end equipment to consumers.

Market share of 16:9 TV sets in Austria (annual sales, sales value, total installed base)



Market share of 16:9 TV sets

(Austria)

	1993	1994	1995	1996	1997	1998	1999
% of units sold	0.0%	0.1%	0.8%	2.5%	4.8%	5.1%	6.4%
% of value (sales)	0.0%	0.4%	2.0%	6.7%	12.7%	15.1%	17.9%
% of total sets in HH	0.0%	0.0%	0.2%	0.5%	1.2%	2.0%	3.0%

Source: EACEM

9.2 Key figures for 16:9 broadcast

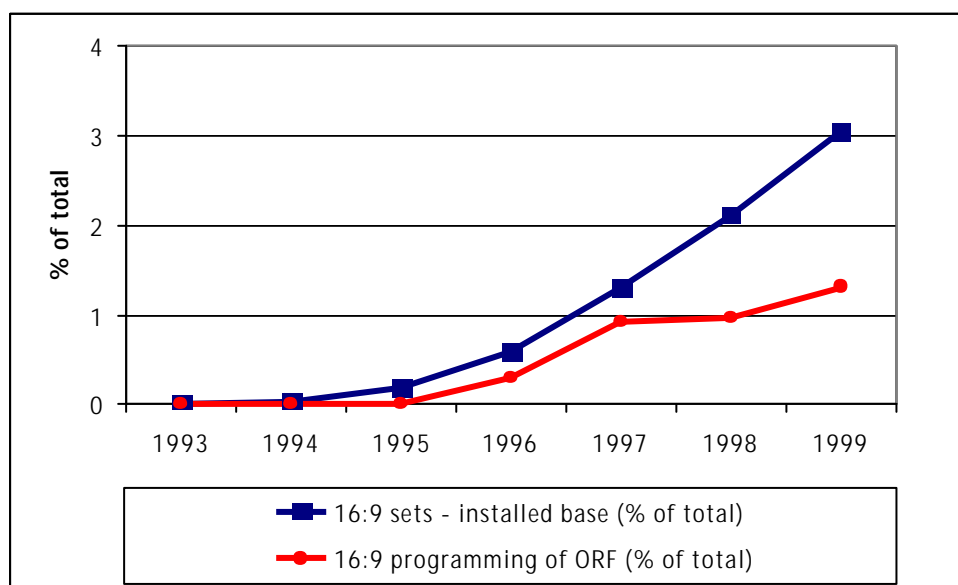
16:9 programming volume

ORF started to broadcast in 16:9 in 1996 with 51 hours for the first year. Until 1999, this figure increased to 228 hours, which is a share of 1.3 % of the total TV broadcasting volume of ORF (two television channels). The percentage of programmes transmitted in 16:9 by ORF does not reach the market share of 16:9 sets in Austrian TV households.

The growth of 16:9 broadcasts by ORF is directly related to the participation of the broadcaster in the 16:9 Action Plan:

- In 1995 and 1996 ORF submitted proposals to the Action Plan and received substantial funding from the European Commission. As a consequence, 16:9 productions were launched and broadcast. The percentage of 16:9 programmes increased steadily from a zero base to 0.3 % in 1996 and 0.9 % in 1997. (Many projects submitted in 1996 were realised and completed in 1997).
- When the Action Plan came to an end in 1997, the incentive for ORF to produce in 16:9 format was gone. As a consequence, the volume of 16:9 productions did not further increase. The percentage of 16:9 programming in 1998 (1 %) was nearly the same as in 1997.
- In 1999, ORF increased the percentage of its 16:9 broadcasts again.

Market share of 16:9 TV: programming volume of ORF vs. 16:9 sets (installed base)



It is hardly possible to measure the total percentage of 16:9 programming in Austria due to the overspill of German TV programmes via satellite and cable. The 16:9 broadcasts of the German public service broadcasters, of SAT.1 and – in case of subscription – of the pay-TV channel Premiere (World) can be received in more than two thirds of the Austrian television households. In 1999, ORF had an audience share of about 58 %, ARD and ZDF 6 % (combined) and SAT 1 had a share of 5 %. No figures are available for Premiere (World), but the share is definitely below 1 %. Given the fact that ARD, ZDF and SAT 1 are broadcasting only a small percentage of their output in 16:9 format, it is clear that these programmes represent only a very small share of the total programme volume that can be received in Austria. They can be neglected when calculating the audience share of 16:9 television in Austria.

The following table presents a survey of all 16:9 TV programmes transmitted by ORF (both channels) in a period of two weeks (22nd July – 4th August 2000).³⁹ The result is:

- During these two weeks, ORF has broadcast 4 programmes with a total of about 6 hours in 16:9 format.
- 3 of the 4 programmes are broadcast in prime time. They consist of a movie, a documentary and a music show.
- The total of 6 hours for two weeks is close to the average of 4 hours / week as stated by ORF (the total 16:9 programming volume in 1999 was 210 hours).

Wide-screen broadcasting in Austria: 22nd July 2000 – 4th August 2000				
<i>Programme genre</i>	<i>Channel</i>	<i>Title</i>	<i>Time</i>	<i>min.</i>
Feature Movies	ORF	Greedy – Auch erben will gelernt sein	20:15 – 22:05	110
Documentaries	ORF 2	Schauplätze der Zukunft	11:35 – 12:30	55
	ORF 2	Universum	20:15 – 21:05	50
Popular entertainment	ORF 2	Wenn die Musi spielt ...	20:15 – 22:25	130
TOTAL				345

Audience share of 16:9 television

ORF does not survey the audience market share of its programmes in 16:9 in detail and consequently cannot provide any figures on that topic. It would be an enormous effort to calculate the audience share with a bottom-up approach, i.e. looking up the quotas of all individual programmes that were broadcast in 16:9 and adding their share.

As a rule of thumb, ORF broadcasts about 30 – 40 % of its wide-screen programmes in prime time. The majority of these 16:9 programmes in prime time are either feature movies or the popular documentary "Universum". Being typical prime time content, these programmes are designed for a mass audience. Therefore, it is likely that the audience share of 16:9 programmes is considerably higher than their percentage of the total programme volume would suggest at first sight. However, as argued above, it is impossible to give an estimate of what the actual figure might be.

³⁹ The survey is based on the TV programme guide "TV media", which uses a special symbol to indicate programmes that are broadcast in wide-screen format.

Types of programme broadcast in 16:9

About 60 % of ORF's wide-screen programming consists of feature films and an average of 15 % of documentaries. There are no news broadcasts and no advertising spots in 16:9 format. A major impediment for the faster diffusion of 16:9 is that there are no sports programmes in 16:9 format, except for 1997, when – according to ORF – 1 % of all 16:9 transmissions consisted of sports programmes.⁴⁰

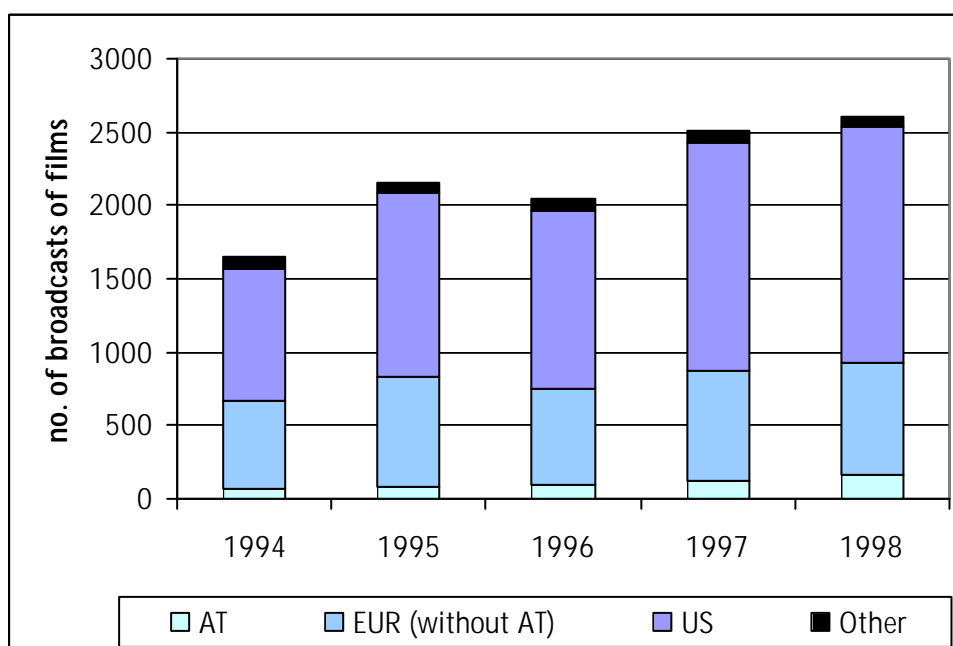
Austrian TV programme guides make references to programmes in 16:9 format. They indicate the format using a small symbol. However, they do not actively promote this format in any way. ORF itself does not make any efforts to promote the 16:9 format. For instance, there are no trailers of wide-screen programmes in 16:9.

9.3 Key figures for 16:9 production

The production market in Austria is only poorly developed. There is no major independent producer. Most Austrian production companies depend to a high degree on ORF orders. The majority of TV programmes produced in 16:9 format have either been ordered by ORF or have been co-productions of ORF with German TV stations.

Co-productions boomed in the mid 1990s, especially with German public service broadcasters. Since most of these productions were financed up to 80 – 90 % by the German partner, decisions regarding production in 16:9 or 4:3 used to be taken in Germany. For example, "Tatort", a crime series produced in German-Austrian co-operation is produced in 16:9 on Super16 because of an initiative of the German partner ARD.

Number and origin of broadcasts of films on ORF



⁴⁰ Data provided by ORF in July 2000.

ORF itself produces only a very small number of feature films for television, and there is hardly a film production industry for cinema in Austria. As a result, the majority of feature films on ORF is of foreign origin. In 1998, the two ORF channels showed 2,659 feature films. Of these . . .

- . . . 766 films came from other European countries (28.8 %).
- and only 155 (5.8 %) were Austrian productions.⁴¹

It can be concluded that Austrian film productions will not be a driver for the diffusion of 16:9 television. In fact, it seems that the Association of the Austrian Audiovisual and Film Industry ("Fachverband der Audiovisions- und Filmindustrie Österreichs") itself is not very interested in 16:9. The association was not able to offer any statistical records regarding 16:9 productions in Austria. When asked to give an estimate on the volume of Austrian 16:9 productions, the association recommended to contact ORF.⁴² The Austrian producers association has not lobbied for 16:9 productions in any way.

⁴¹ Source of data: EAO 2000.

⁴² Information based on an e-mail from Mr. Elmar A. Peterlunger from the "Fachverband der Audiovisions- und Filmindustrie Österreichs" from 21st June 2000.

10. Analysis of drivers and impediments to the adoption of the 16:9 format since 1993

10.1 The determinants of consumer demand for wide-screen TV receivers

Volume of content available in 16:9 format

The key driver for consumers to purchase a 16:9 TV will be content. The problem is that the "chicken and egg" problem has not been solved in Austria yet. As long as broadcasters do not produce and broadcast enough premium content in 16:9 format, and as long as 16:9 TV means black stripes on the left and right side of the wide-screen TV set for the majority of programmes, i.e. 4:3 programmes, the willingness of consumers to change to the 16:9 format will remain limited. In 1999, only 1.3 % of the ORF programme was broadcast in 16:9, and only 3 % of all TV households were equipped with a 16:9 set.

The only attractive content that is available in a format to the advantage of 16:9 set owners are feature films. In Austria (and also in Germany), feature films are broadcast in the "letter box" format (i.e. with black stripes on top and bottom). Austrian viewers have become used to these letterbox-pictures for decades. These have been broadcast in 4:3 PAL in letterbox-format from the very beginning. Although the letter-box format must not be confused with a 16:9 format, it could be a driver for 16:9 TV sets in the future.

Prices for 16:9 sets

Another factor are the prices for 16:9 sets. Retailers expect that high-end wide-screen TV sets will become cheaper over the next 2-3 years. As of now, a 4:3 set is still cheaper than a 16:9 set of the same size. There is already a large offer of multiple brands and models of wide-screen TV sets available. Practically every manufacturer offers 16:9 sets with different specifications, and every retail store displays a number of 16:9 receivers. But consumers seem to wait for sets to become cheaper.

It is interesting to note that the Austrian Consumers Association recommends buying a 16:9 TV only to 'cineasts'. To this target group, the association recommends 16:9 sets in combination with 100-Hz-technology, PALplus and Dolby Surround. The association further recommends to buy quality sets. It is sceptical about the quality of the cheapest 16:9 TV sets in trade. It criticises that prices for 16:9 sets are still too high, that the offer of content in 16:9 lacks other than feature films and that link between 16:9 and digital television is missing. For the 'average customer', the Consumers Association therefore proposes to bridge the time to the large-scale conversion to DVB with a (cheaper) 4:3 set. It believes that 16:9 will be the format of the future, but for the near future it clearly prefers 4:3.⁴³

⁴³ Information based on an interview with Mr. Srna from the Austrian consumers association ("Verein für Konsumenteninformation") on 17th July 2000.

DVD players and other digital equipment as drivers for 16:9 TV

DVD-players, Dolby-Surround-Systems and video-beams (for home theatres) could be drivers for the diffusion of 16:9, but it is too early to have definite empirical evidence for their impact on sales. At this point in time, it is the domain of early adopters and high-income groups to make "all-in-one" purchases. These target groups are found to increasingly buy DVD players and 16:9 sets in one go, as retailers report.

Video-recorders, analogue satellite-receivers and (home-)video-cameras, on the other hand, do not drive 16:9. Digital satellite-/cable-receivers are considered to support 16:9 partly, but they are not considered major drivers.⁴⁴

10.2 The determinants of supply: strategy of the main national market players with regard to 16:9 format

The strategy of ORF

ORF took part in the PALplus board from the very beginning, but it never started any initiative to promote 16:9 with a special campaign. It has been a sort of silent member of the group, contributing its (small) part of the work to develop PALplus, but never following any strong lobbying for 16:9.⁴⁵

In 1996 and 1997, ORF submitted a lot of proposals to the 16:9 Action Plan for funding, mainly addressing culturally valuable stock programmes like the transmission of operas and dramas. Nearly all of these proposals were granted financial support. As these programmes mainly addressed minority tastes, however, they did not represent a strong push for the Austrian wide-screen television market. It can be argued that ORF used the Action Plan as an opportunity to generate money for television productions.

However, ORF has never actively promoted the 16:9 format to its audience. The broadcaster was not really interested in encouraging a wider diffusion of 16:9 sets or in substantially increasing the percentage of 16:9 in its own programmes (1.3 % in 1999).

Manufacturers and retailers: difficulties in promoting 16:9

Austrian retailers are clearly interested in promoting 16:9 television. They consider 16:9 as the future format of television, especially for TV sets with big screen sizes. Small, portable TV sets are considered to remain in 4:3 format.

Retailers calculate a long term co-existence of 4:3 and 16:9 and not a complete shift to 16:9. Up to now, 4:3 and 16:9 sets have been promoted to the same extent, but recently there seem to be some considerations to emphasise the promotion of wide-screen TV sets. Retailers criticise the small amount of programmes in 16:9. They would appreciate a massive increase in 16:9 broadcasts together with a public declaration of broadcasters regarding their future 16:9 programming policy in order to dissipate consumers' doubts.⁴⁶ They cannot use difficult big sports

⁴⁴ Information based on data provided by Austrian retailers in June and July 2000.

⁴⁵ Information based on an interview with Mr. Matzel from the former PALplus bureau on 14th July 2000.

⁴⁶ Information based on data provided by Austrian retailers in June and July 2000.

events such as Olympic Games or Football Championships to actively promote 16:9 TV as long as the broadcasters do not transmit these events in 16:9 format.

In Austria, as well as in Germany, only 1 – 5 % of 16:9 TV sets sold have a PALplus decoder inside. Given the history of 16:9 in Austria and Germany, it is strange that nearly all 16:9 broadcasts consist of PALplus transmissions and that there would not be a market for 16:9 TV sets without PALplus, but the vast majority of wide-screen receivers is not equipped with a PALplus decoder.

11. Conclusions and assessment of the 16:9 Action Plan impact on Austria

In Austria, the public broadcaster ORF was the only major player who actively participated in the 16:9 Action Plan. ORF started 16:9 transmissions in PALplus in 1996. The financial grants provided by the Action Plan were an important incentive to do so. Mr. Andreas Ulrich, former national representative to the Action Plan Management Committee, assesses the role and strategy of ORF as follows:⁴⁷

- If Austria had not joined the European Union in 1995, and if there had not been the Action Plan, ORF probably would not have started to broadcast in 16:9. One might argue that ORF was forced to launch PALplus productions and transmissions due to its many co-productions with German public service broadcasters, which had already launched 16:9. But there is one strong argument undermining this theory, i.e. the recent tendency within ORF to realise co-productions more and more with German private TV stations instead of the German public service broadcasters. If there had not been the Action Plan facilitating the launch of 16:9 productions and programming, ORF probably would have shifted earlier to co-productions with commercial German TV stations, which do not favour 16:9 (with the partial exception of SAT.1).
- In 1996 and 1997, ORF submitted a lot of proposals for Action Plan support mainly addressing culturally valuable stock programmes like the transmission of operas and dramas. Nearly all of these proposals were granted financial support. As these programmes mainly addressed minority tastes, however, they did not represent a strong push for the Austrian wide-screen television market. In fact, the contents of these proposals were not chosen with regard to the expected audience share of the content, but with regard to the expected financial aid from the Action Plan. Because Austria could not participate in the Action Plan from the beginning, ORF was generally granted financial support to the amount of 80 % of the additional costs caused by the wide-screen format (instead of 50 % granted to German broadcasters).
- ORF did not hand in any proposals for re-mastering of existing contents, but only proposals for new productions, which were more expensive and therefore provided more financial aid from the Action Plan.
- It can be concluded that ORF exploited all opportunities of the EU initiative. It launched as many proposals as were technically feasible. ORF would not have had the technical capacities to realise more projects.
- From the very beginning, ORF equated more or less 16:9 and PALplus. Standards of the MAC-family have never been an issue in Austria. ORF started transmissions in DVB only in 1999 in form of a test operation. Without PALplus, there would probably not be a 16:9 market in Austria at all.

⁴⁷ Information based on an interview with Mr. Andreas Ulrich, former national representative to the Action Plan Management Committee, on 12th July 2000.

12. Key figures for the Austrian market

12.1 Country fundamentals

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Population (millions)	7,718	7,823	7,884	7,993	8,030	8,047	8,059	8,072	8,078	8,083	8,091
Households (millions)	2,922	2,932	2,941	2,972	2,976	3,019	3,051	3,071	3,141	3,243	
GDP (in Euros billions)	144,24	150,71	169,3	165,23	177,32	209,4	206,86	186,5	190,59	195,4	205,09

12.2 Household equipment

<i>As of 31 of December</i>	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TV households (millions)	2,834	2,844	2,853	2,853	2,857	2,898	2,929	2,979	3,015	3,095	3,166
TV households (% of total households)	97,00%	97,00%	97,00%	96,00%	96,00%	96,00%	96,00%	97,00%	96,00%	97,30%	
TV Households with 2 TV sets or more (millions)					1,289	1,362	1,465	1,480	1,510	1,362	
TV Households with 2 TV sets or more (% of TV HH)					45,12%	47,00%	50,02%	49,68%	50,08%	44,00%	
TV Households with 16:9 TV sets (millions)	0,000	0,000	0,000	0,000	0,001	0,005	0,017	0,039	0,064	0,094	0,132
TV Households with 16:9 TV sets (% of TV Households)	0,00%	0,00%	0,00%	0,00%	0,02%	0,15%	0,52%	1,23%	2,02%	2,97%	4,17%
VCR Households (millions)	1,052	1,231	1,441	1,724	1,926	1,966	2,035	2,091	2,158	2,307	
VCR Households (% of TV Households)	37,12%	43,28%	50,51%	60,43%	67,41%	67,84%	69,48%	70,19%	71,58%	74,50%	
DVD Households (millions)											10,000
DVD Households (% of TV Households)											0,32%
Digital STB Households (mil- lions)	0	0,000	0,000	0,000	0,000	0,000	0,002	0,012	0,029		
Digital STB Households (% of TV Households)	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,07%	0,40%	0,96%		
IDTV Households (millions)	0	0	0	0	0	0	0	0	0		
Digital TV Households (millions)	0	0	0	0	0	0	0,002	0,012	0,029		
Digital TV Households (% of TV households)	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,07%	0,40%	0,96%		

12.3 Consumer electronics market

<i>As of 31 of December</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
TV sets sales in units (thousands)				532,6	549,6	526,9	489,3	456,8	486,4	461,3	520,0
TV sets sales in value (millions)				294,0	306,0	303,0	270,0	241,0	253,0	226,2	
4:3 TV sets sales in units (thousands)				532,6	548,6	522,9	477,3	434,8	461,4	431,8	472,0
4:3 TV sets sales in value (millions)				294,0	305,0	297,0	252,0	210,0	215,0	185,6	
16:9 TV sets sales in units (thousands)	0,0	0,0	0,0	0,0	1,0	4,0	12,0	22,0	25,0	29,5	48,0
16:9 TV sets sales in value (millions)	0,0	0,0	0,0	0,0	1,0	6,0	18,0	31,0	38,0	40,6	
4:3 TV sets average price				552,4	555,7	568,1	527,5	483,4	465,8	429,8	
16:9 TV sets average price				1948,0	1588,0	1524,0	1501,0	1391,2	1340,3	1376,3	
DVD sales in units (thousands)											45,0
DVD sales in value (millions)											

12.4 Hours produced in 16:9 by broadcasters/by order of broadcasters

<i>As of 31 of December</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
ORF											

12.5 Hours broadcast in 16:9

<i>As of 31 of December</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
ORF (1 + 2)	0,0	0,0	0,0	0,0	0,0	0,0	51,0	162,0	168,0	228,0	420,0