



**Report for the
Broadcasting Commission of Ireland
Overview Study into the
Experiences and Practices of DTT in Austria**

Final Version 1.0

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Table of Contents

1	Foreward and Acknowledgements.....	1
2	Introduction and Policy Objectives.....	2
2.1	DTT Overview.....	2
2.1.1	Number of Multiplexes and Operators.....	2
2.1.2	Transmission Standards and Coverage.....	2
2.2	Chronology.....	3
2.3	Policy Objectives.....	5
2.3.1	Overview.....	5
2.3.2	Main Objectives.....	5
3	Economic Model.....	7
3.1	Structure of TV Market.....	7
3.1.1	Service Providers and Market Shares.....	7
3.2	Viewer Choice.....	9
3.3	Demand for DTT.....	9
3.4	Investment Proposition.....	10
3.5	Financial Support and State Assistance.....	10
3.6	Commentary.....	12
4	Regulatory Framework.....	13
4.1	Legislative Background.....	13
4.1.1	Legal Provisions.....	13
4.1.2	Key Players.....	13
4.2	Licensing Structure and Requirements.....	15
4.3	Licensing Process.....	16
4.4	Licence Fees and Other Payments.....	17
4.5	Technical Considerations.....	17
4.6	Realisation of Policy Objectives.....	17
5	Switch-off Strategy.....	19
5.1	Strategy Overview.....	19
	Acronyms.....	20

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1 Foreward and Acknowledgements

Under the provisions of the Broadcasting (Amendment) Act 2007, the Broadcasting Commission of Ireland (BCI) is responsible for arranging for the establishment, maintenance and operation of three national television multiplexes (muxes) conveying Digital Terrestrial Television (DTT) across Ireland.

The BCI wishes to develop its knowledge and understanding of the various considerations in respect of the development and roll-out of commercial DTT in Ireland. An essential part of this, sitting alongside broader consultation and policy development work, is an examination of other jurisdictions. To this end, the BCI viewed the Austrian experience as important and commissioned GOS Consulting Limited to compile this report providing an overview of experiences and practices in Austria.

We wish to express our gratitude to the following people for their cooperation and advice in compiling this report:

Mr. Michael Wagenhofer, Managing Director, ORS

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Mrs. Daniela Maranda, project leader, ATV

2 Introduction and Policy Objectives

2.1 DTT Overview

2.1.1 Number of Multiplexes and Operators

In May 2005, KommAustria opened the application process for a single 10-year licence to set up and operate the DTT platform. Given the limited amount of broadcast frequencies available in Austria, only one country-wide multiplex has been launched in September 2006. A second, multiplex will be launched in October 2007, when first analogue TV stations are turned off. This will first take place in the main cities of Austria¹.

Each multiplex provides three or four television programme services as well as data services. These data services are mainly focused on MHP multi-text and the EPG (electronic programme guide). KommAustria has required that the first DTT multiplex provides the services of the national public service broadcaster (ORF 1, ORF 2) and the national commercial broadcaster ATV+ at no cost to viewers and with an improved image quality. The services of the second multiplex have to be determined by the DTT licence holder (ORS).

ORS (Austrian Broadcasting Services) – the network operation company – has won the licence to operate both initial DVB-T multiplexes. In co-operation with the broadcasters (ORF and ATV) ORS issued several technical guidelines for Set-Top-Boxes that guaranteed TV reception and the usability of the MHP-services².

The “Kick Off” of the first multiplex was September 27th 2006 with an initial coverage of 70% and three programmes (ORF1, ORF2 and ATV). The initially envisaged short simulcast phase of four to six months only, has been extended to about one year. Therefore, the second multiplex will launch in October 2007.

2.1.2 Transmission Standards and Coverage

By 1 March 2007, the first multiplex (MUX A) had to reach 60% of households. This reach has to increase to a population coverage to 90% by March 2009. The financing of this roll-out is proportionately divided between the service providers (which is a mix of the public service provider ORF with its two programmes and the commercial provider ATV).

Due to the very high costs for reaching a 95% coverage in Austria (due to the mountainous terrain), the cost for covering the remaining 5% of population by DTT will only be borne by the public service provider ORF alone.

The second multiplex, MUX B, will be launched in October 2007. It is required to have a population coverage of at least 60% by the beginning of 2008 and provide access to a minimum of three additional television programme services. The programme selection is the responsibility of the operating company ORS.

All digital terrestrial TV programmes are broadcast using the MPEG-2 standard. The main reason for the choice of MPEG-2 has been based on the significantly lower cost of set-top boxes. The main function of terrestrial broadcast as a basic public service typically addresses lower income households or households of elderly people.

A switchover towards MPEG-4, which allows for a much higher number of channels within the same frequency spectrum is not foreseen until 2009 or 2010.

¹ Source: Digitag <http://www.digitag.org/WebLetters/2005/External-October2005.html>

² Source: <http://www.digitag.org/WebLetters/2006/External-March2006.html>

2.2 Chronology

The diagram overleaf shows the chronology of the DTT introduction in Austria.

June 1999: ORF first announce plans for the transition from analogue to DTT.

December 1999: ORF launched a field trial with DVB-T in Styria to test the strength of the signal in extreme alpine areas.

April 2001: The Austrian Communications Authority (KommAustria) was established, with a purpose of leading the administration of regulatory of broadcasting.

2002: The government set up a working group Digitale Platform Austria to help with digital switch-over. It tasked with developing scenarios for the speedy introduction of digital broadcasting and supporting future multimedia services.

June 2003: Launch of Austria's first national terrestrial TV station, ATV+.

December 2003: The Strategic plan for digital switchover "Digitisation strategy for the introduction of digital terrestrial television in Austria" was published. It was developed by KommAustria with the assistance of the Digital Platform Austria working group.

January 2004: The government launched the Digitalisation Fund to aid with the transition to digital television. The Fund is endowed with €6.75 million annually from the broadcasting fees collected.

March 2004: The introduction of digital terrestrial TV in Austria.

April 2004: A DTT trial began in Graz. 150 households were involved in initial trial which lasted until the end of July.

May 2005: KommAustria opened its application process for a single 10-year licence to set up and operate the DTT platform.

September 2005: Deadline for applications for licence to operate the first Austrian multiplex.

February 2006: Broadcast network operator ORS is awarded with license to provide DTT services in Austria

September 2006: DVB-H pilot trial headed by telecom operator Mobilkom Austria and its partner's public broadcaster ORF, Salzburg University, Siemens, H3G and network operator ORS begins in Salzburg.

September 2006: Launch of first multiplex

March 2007: Analogue switched off in Bregenz and surrounding area. This is the first area in Austria to go digital only.

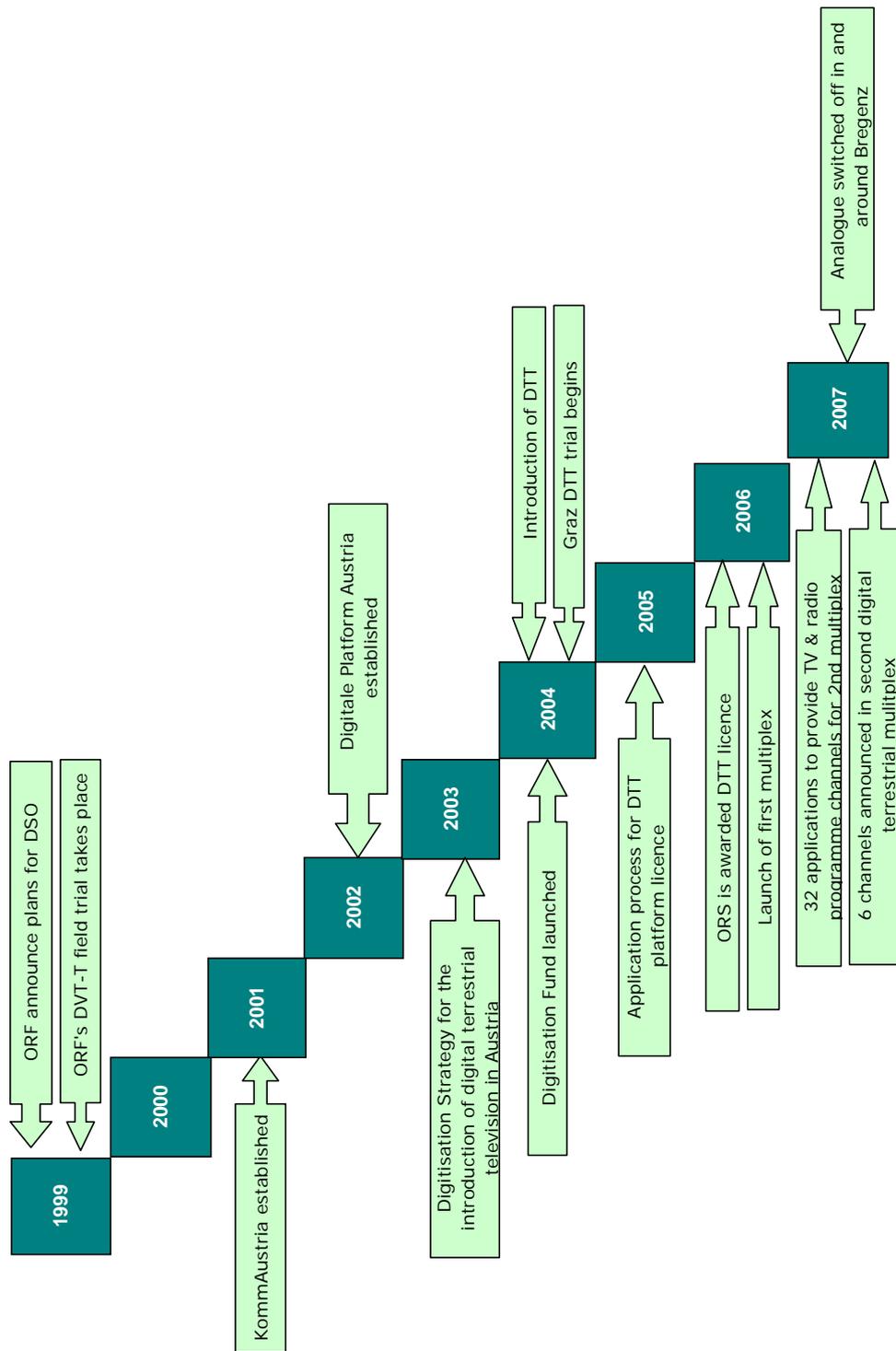
April 2007: DTT covers 70% of population.

April 2007: Thirty-two applications had been received to provide programme channels for the second DTT multiplex in Austria due to launch in October 2007 (16 TV, 16 radio)

July 2007: Six channels were announced in Austria's second digital terrestrial multiplex. The multiplex will comprise culture channel 3sat, Sport Plus, German broadcasters Pro7 and Sat.1, Euro news and the Austrian commercial channel ATV.

October 2007: Expected launch of second Multiplex (MUX B) after switch-off of analogue terrestrial TV stations in main population centres (major cities of Austria).

From 2010: After analogue switch-over is completed, additional 3 to 4 multiplexes will be licensed and launched.



2.3 Policy Objectives

2.3.1 Overview

The digitisation of broadcasting in Austria is part of a global strategy for the future of communication technologies and platforms that is linked to the objectives of the information society. The digitisation of broadcasting (television and radio) was therefore also a major objective of the 2001 reform of the Austrian broadcasting laws. The Austrian legislator attaches particular importance to terrestrial transmission in the light of the reception situation in Austrian households: although only approximately 15 percent of all households have exclusively terrestrial television reception, the majority of households (around 60 percent) depend on terrestrial reception to receive the Austrian television programmes, which are not available via analogue satellite due to copyright reasons.

An important political objective of digitisation in Austria is therefore to first establish a viable broadcasting platform for current Austrian TV programmes second to add greater media variety in television and new types of information society services. As a result, another objective of digitisation is to promote Austria as a media and business centre and increase its future competitiveness vis-à-vis neighbouring communication markets³.

A key motivation of Austria in maintaining a strong terrestrial broadcast is its potential in helping to preserve Austria's cultural identity. The responsible ministry is the joint ministry for women, media and public services (while telecommunications is part of the ministry for traffic, technology and innovation).

Terrestrial broadcasting allows for local and regional distribution content unlike DTH where typically larger areas are covered. Consequently, it is seen as a suitable platform for the diffusion of Austrian content⁴.

2.3.2 Main Objectives

According to the digitisation strategy of KommAustria, the main media policy objectives are⁵:

- **A high-performance infrastructure:** creation of an innovative, viable communications infrastructure for Austria's provision of broadcasting services;
- **"New basic provision":** establishment of a "new basic provision" entailing a significant increase (12 to 16 television programmes) of terrestrial programmes (in particular "free TV"), thereby strengthening the programmes of the ORF stations and other Austrian broadcasting companies in relation to their competitors;
- **Consumer acceptance:** a particular goal is to ensure that consumers have access to terminal equipment which is affordable and complies with the known criteria of interoperability of open software standards;
- **Analogue turn-off:** turn-off of broadcasting frequencies previously used for analogue transmission (ATO);
- **Quality:** improving quality for users of TV programmes by enhancing image and sound quality;
- **Variety:** Increasing quantity in the form of more programmes and above all different types of programmes (data services, expanded Teletext, interactive applications, EPGs, etc.) by a more efficient use of the spectrum);
- **Mobility:** new modes of use in the form of portability and mobility (car, train, PDA, etc.);
- **Media location:** Promotion of Austria as a media location in several business fields either directly or indirectly related to broadcasting: film and television production, authors and

³ Source: Introduction of digital broadcasting in Austria - Communication from the Republic of Austria to the European Commission, December 2003

⁴ Source: Analysys, Public Policy Treatment of DTT in Communications Market, Annex, 2005

⁵ Source: Digitisation Strategy, KommAustria, December 2003

directors, services like sound studios and lighting companies, advertising, creative and media agencies, etc.

- **Service provision mandate:** carrying out of service provision mandate in mountainous and sparsely populated regions, in which terrestrial distribution is not economically feasible, by satellite broadcasting, in particular of the programmes of ORF and ATV+;
- **Competitiveness:** Avoidance of situations and conditions which may make Austrian national television and other Austrian broadcasting companies less competitive in relation to their mainly German competitors during (and obviously also after) the “simulcast” phase.

3 Economic Model

3.1 Structure of TV Market

Austria has 8.2 million inhabitants, 3.3 million households out of which 3.25 million are TV households. The Austrian TV market is characterised by a very high penetration of cable and satellite TV. Over 80 percent of households are equipped with cable TV or satellite receivers and thus receive many foreign, mainly German TV stations. However, terrestrial transmission is still the most important form of transmission for the Austrian TV programmes since, for copyright reasons, their content must be encoded if transmitted by digital satellite. For this reason, 60 percent of households depend on terrestrial transmission to receive Austrian television programmes.

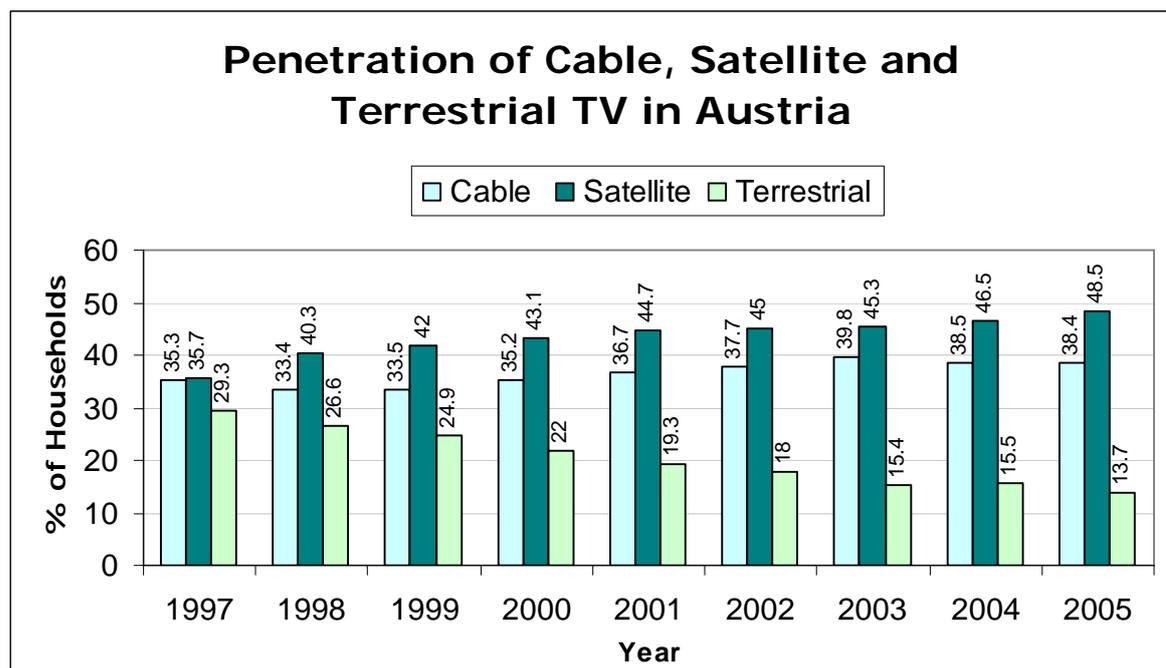


Figure 1: Penetration of cable, satellite and terrestrial TV in Austria⁶

Figure 1 shows the penetration of cable, satellite and pure terrestrial TV access in Austria. During the past 10 years, pure terrestrial reception of TV programmes has rapidly decreased, satellite TV increased steadily and cable TV penetration stabilised at around 39 percent.

3.1.1 Service Providers and Market Shares

The Public Service Broadcaster **ORF** (Austrian Broadcasting Corporation) holds a strong TV market position in Austria, with approximately 50 percent of the market share. ORF owns the technical infrastructure of transmission in Austria. The technical infrastructure for the national DVB-T network has been separated from ORF's programme activities and relocated to a new company named ORS (100 percent ORF owned) – for more information and implication of this separation, see section 1.2 below.

ATV+ is the only national commercial broadcaster. ATV+ was launched on the terrestrial platform in June 2003 although its services had previously been available on the cable platform.

⁶ Source: Statistik Austria, http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/hoerfunk_und_fernsehen/index.htm

German TV programmes have a strong presence in Austria. All major private stations of Germany operate so-called “windows” with specific Austrian advertising. Due to the same language, the German private stations (**RTL, RTL2, Super RTL, Pro7, SAT.1 and Kabel1**) together with the German public service broadcasters (**ARD and ZDF**) reach around 30% viewers market share.

Figure 2 below shows the market shares for all main programmes. Figure 3 shows the daily reach of the main TV programmes (“daily reach” is defined as watching a TV programmes for at least one continuous minute per day).

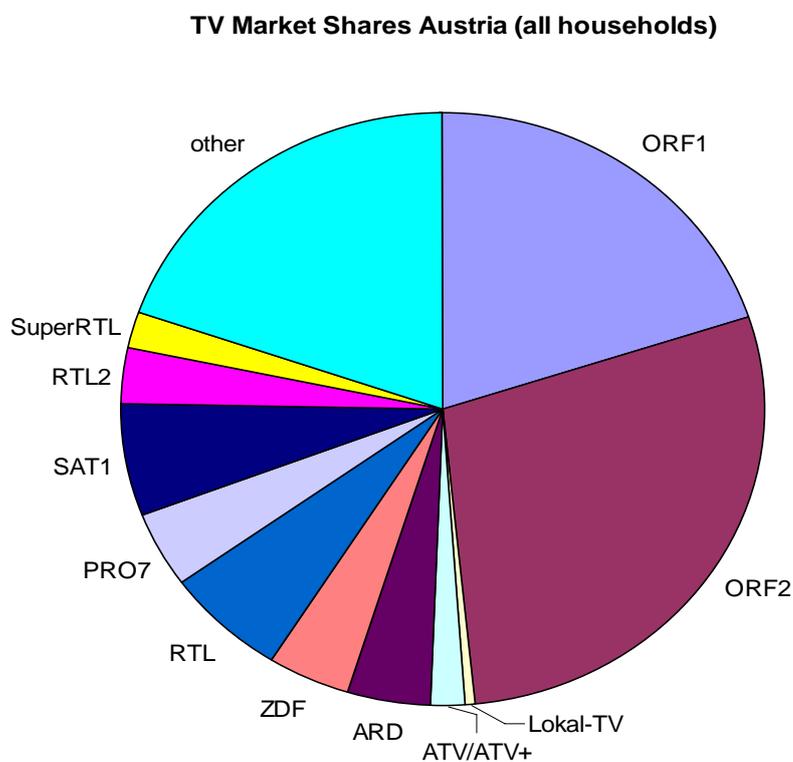
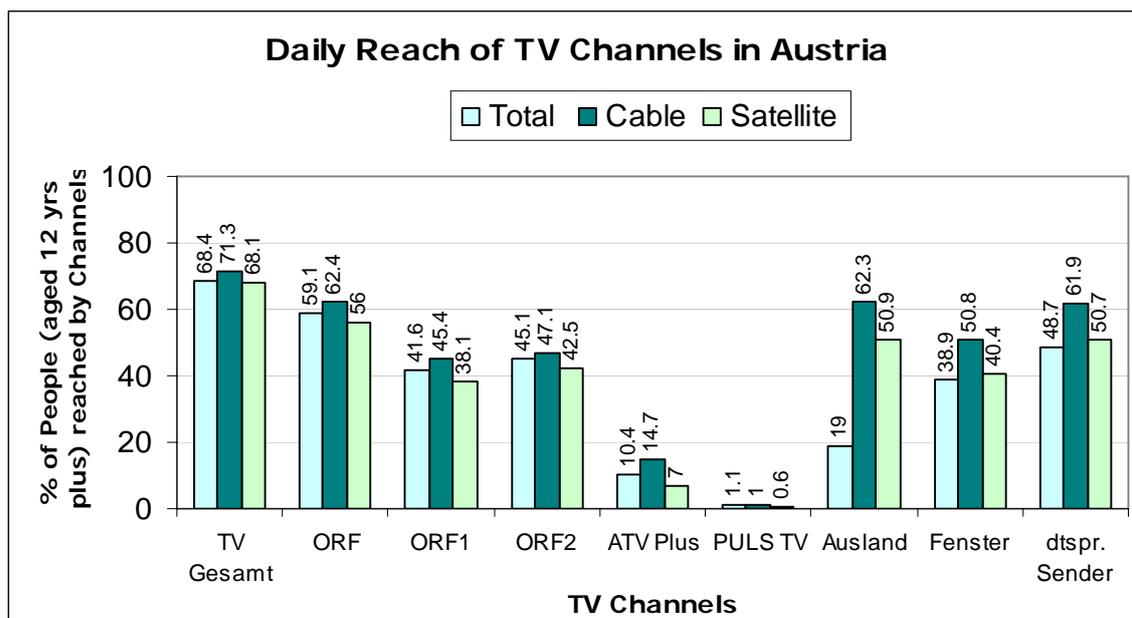


Figure 2: Market shares of TV programmes in Austria⁷



⁷ Source: Statistik Austria, http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/hoerfunk_und_fernsehen/021239.html

Figure 3: Daily reach of TV programmes in Austria⁸

3.2 Viewer Choice

As discussed in Chapter 1, one of the initial main objectives of digital terrestrial TV is the provision of a basic coverage of Austrian programmes; therefore the first multiplex contains the two public and one commercial Austrian programmes. The additional multiplex will provide more choice of programmes (6 additional programmes) only in the main population centres, which are represented by the 10 largest cities comprising around 60% of the Austrian population.

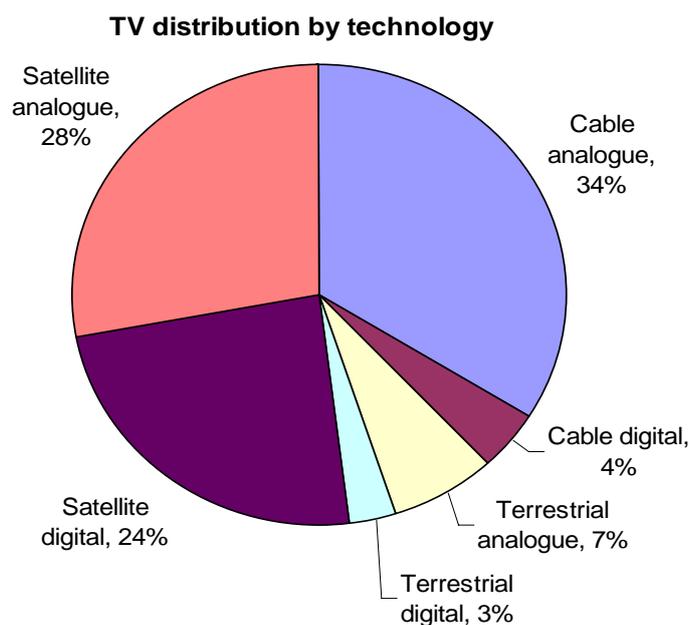
The model is "free TV": once a viewer has bought a set-top box, programmes are provided free of charge. In Austria, all TV households have to pay a monthly fee for the public service broadcaster ORF. Only a few low-income households are exempt from this fee. This fee is around €20 per month and varies slightly in different federal states (ranging from €17.18 in Oberösterreich to €21.88 in Kärnten)⁹.

This monthly TV fee contributes about 50% of the ORF's budget. The remaining budget of ORF is financed by advertising and programme licensing fees.

Due to the limited number of multiplexes and terrestrial digital channels, pay TV offerings and additional (international) programmes need to use cable or satellite systems to reach their customers.

3.3 Demand for DTT

By the end of 2006, DTT reached a market share of 30 percent of the total terrestrial market. This is a rapid adoption considering that this service has been launched only 4 months earlier. The following figure shows the total distribution of TV by technology in Austria.

**Figure 3: Distribution of different TV technologies end of 2006 in Austria¹⁰**

Adding up all digital broadcast technologies in Austria, gives an overall digitisation degree of 35 percent, which is above the European average of 33.5 percent end of 2006. The largest contributor to this figure is the popularity of digital satellite broadcast, which is exclusively driven by market demand.

⁸ Source: Statistik Austria,

http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/hoerfunk_und_fernsehen/021237.html

⁹ Source: http://www.orf-gis.at/index.php?kategorie=gebuehren&thema=tabelle_tv

¹⁰ Source: KommAustria, Digitalisierungskonzept 2007

3.4 Investment Proposition

The business plan of the mux operator ORS states a total investment volume of €36 million (for Mux A and Mux B). Projected revenues will increase from €1.6 million in 2006 to €28.5 million in 2010, while the company will become EBIT positive in 2009¹¹.

According to a study by the Austrian regulator RTR¹², the cost of digital terrestrial TV broadcasting are considerably lower on a per-programme basis compared to analogue transmission with a similar coverage.

The following table summarises the estimated annual costs for a country-wide coverage using different technologies and coverage obligations.

Technology	Coverage	Cost per year (€m):		
		for 1 multiplex (4 programmes)	for 6 multiplexes (24 programmes)	per programme
DVB-T stationary	90%	18	108	4.5
DVB-T stationary	95%	28	168	7
DVB-T portable, indoor	50%	8	48	2
DVB-T portable, indoor	60%	20	120	5
DVB-T portable, indoor	80%	48	288	12
Comparison:				
Satellite Transponder, 8 programmes		6		0.75
Satellite Transponder, 24 programmes			19.5	0.81
Terrestrial analogue, 1 programme				25

Table 1: Annual costs of different TV broadcast technologies

The current annual cost for the analogue terrestrial transmission of one ORF programme is around €25 million. Switching to DTT (with 95 percent coverage), this cost can be reduced to €7 million per year – less than 30 percent of the current analogue costs.

The most cost-efficient solution of 50 percent portable indoor coverage with DVB-T is equivalent to 86 percent stationary coverage. Here, the annual cost for one multiplex is €8 million or €2 million per programme. In comparison, the distribution cost via satellite is below €1 million per year, which will make it difficult for many commercial operators with a relatively low market share and relying on advertising financing only to develop a viable business case.

As shown in Chapter 1, around 80 percent of all households in Austria are covered by cable or satellite TV. Therefore, the additional reach through DTT may not prove financially interesting for many commercial operators considering the much higher distribution costs.

3.5 Financial Support and State Assistance

With the introduction of the digitisation concept, Austria also launched a digitisation fund to support projects – among others – related to the roll out of DTT. The resources of the Austrian Digitisation Fund are earmarked for promoting digital transmission technologies and digital applications based on European standards in connection with broadcasting programs. The objectives and bases of the Austrian Digitisation Fund are derived from the intentions of the eEurope 2005 Action Plan, which aims to accelerate the transition to digital television. The fund supports projects which upgrade and reinforce all broadcasting transmission platforms as a special part of communications infrastructure, especially in light of the central role of broadcasting in modern democratic societies. Grants from the Austrian Digitisation Fund are awarded according to technology-neutral criteria with due attention to all transmission means and platforms for digital broadcasting. From 2005 onward, the fund has been endowed with

¹¹ Source: KOA 4.200/06-002

¹² RTR 2004, "Der Umstieg auf DVB-T in Österreich"

€6.75 million annually from Austrian broadcasting fees which are collected together with ORF programming fees but generally allocated to the federal budget¹³.

The European Commission has been notified about this fund and assessed the issue for state aid clearance. The decision has been as follows¹⁴:

On the basis of the foregoing assessment, the Commission has accordingly decided that the aid involved in the scheme "Digitalisierungsfonds" is compatible with Article 87(3)(c) and 87(2)(a) of the EC Treaty.

The Commission reminds the Austrian authorities to submit copies of the foreseen annual reports on the implementation of the measure. The reports shall provide enough details for the Commission to monitor whether the measure distorts competition to an extent contrary to the common interest. The Commission further reminds the Austrian Authorities that all plans to modify this aid scheme have to be notified to the Commission.

Two main criteria had to be fulfilled to obtain this Commission approval¹⁵:

- (1) Financial support for end-user set-top boxes is only allowed if the cost of such a set-top box represents a significant financial barrier (without being specified in terms of a fixed number – it is generally understood that €50 is no significant barrier).
- (2) The financial support must not exceed 50 percent of the retail price.

Since retail prices of basic set-top boxes have rapidly fallen below €50 already in October 2006, when DTT was introduced, the criterion of a "significant financial barrier" could not be fulfilled anymore. Therefore, the financial support has been moved to more advanced set-top boxes, which support additional features such as MHP-MultiText.

ORS as licence holder and operator of the DTT multiplex has outsourced the administration of the subsidy scheme to its subsidiary DFFG (Digitales Fernsehen Förder GmbH, Digital TV Support Ltd.).

The implemented subsidy scheme has 2 main elements:

- The first 100,000 consumers who buy a MHP-enabled set-top box will get a €40 subsidy. This programme has been extended until 15 January 2007.
- Households with TV fee exemption¹⁶ have been granted an extended period until 31 July 2007 to request the €40 subsidy for MHP-enabled set-top boxes.

The administration of this scheme has been implemented through a close co-operation of DFFG, the retail association FEEI (Fachverband der Elektro- und Elektronikindustrie) and the GIS Service company, which is responsible for collecting the general TV fees.

The system is based on vouchers, which have been sent to all households in the coverage areas (2 million households). When handing in such a voucher at a retail store, €40 is subtracted from the retail price of the set-top box. The retailer then claims back the €40 subsidy from the GIS Service company by handing over the voucher.

The co-operation of the TV stations (ORF, ATV), the FEEI (retail association) and RTF (regulator) launched a certification programme for set-top boxes. Each set-top box to be sold in Austria needs to be officially certified and categorised into one of three categories:

- (1) "Interactive profile": Set-top box for DVB-T with MHP-MultiText and Internet connection (DSL) to support interactive applications.
- (2) "Enhanced profile": Set-top box for DVB-T with MHP-MultiText.
- (3) "Zapping profile": Set-top box with DVB-T receiver only.

¹³ Source: http://www.rtr.at/web.nsf/englisch/Foerderungen_Digitalisierungsfonds

¹⁴ Source: State Aid N 622/03 – Austria Digitalisierungsfonds
http://ec.europa.eu/comm/competition/state_aid/decisions/n622_2003/en.pdf

¹⁵ KommAustria: Digitalisierungsbericht 2006

¹⁶ This includes low-income households, disabled and elderly people (with low income/pension)

As mentioned above, set-top boxes with “zapping profile” are excluded from the subsidy scheme, as their price typically lies below €50. As of June 2007, around 40 percent of set-top boxes were MHP-enabled (enhanced or interactive profile)¹⁷.

By the end of 2006, around 3 percent of all households in Austria used DTT.

3.6 Commentary

While the overall financial parameters of DTT are very favourable in comparison with analogue transmission, the main benefits are seen differently by the public service broadcaster and commercial TV operators. The public service broadcaster in Austria has an obligation by law to provide a country-wide terrestrial coverage and has the financial benefit of TV fees charged to every TV household. In contrast, commercial operators rely solely on advertising revenues and may want to focus their reach on regions which are financially most attractive.

As shown in this chapter, even the reduced costs of DTT on a per programme basis are still considerably more expensive than the transmission via satellite, making the case more difficult for – especially smaller – commercial programme providers.

A special situation in Austria is the combining of the public service broadcaster and a commercial operator within the one multiplex. In line with regulations, the licence holder has to charge transparent and non-discriminatory fees based on bandwidth usage alone. This cost-based charging is applicable for a country-wide coverage of up to 90 percent of all households. The public service broadcaster is obliged to provide coverage for at least 95 percent of all households. The cost of this additional 5 percent of coverage will be paid for only by the public service broadcaster alone, while the commercial operator will enjoy the benefit of the additional reach.

¹⁷ Source: http://www.mhp.org/about_mhp/who_is_using_mhp/austria/

4 Regulatory Framework

4.1 Legislative Background

4.1.1 Legal Provisions

Austria has adopted legislation on the transition to digital broadcasting in the form of the Private Television Act (PrTV-G) and, in setting up the "Digital Platform Austria" working group. At the same time the Austrian Broadcasting Regulatory Authority, "Kommunikationsbehörde Austria" or "KommAustria", was charged with developing a specific strategy for the introduction of digital broadcasting. As a further support measure, a digitisation fund was set up by the KommAustria Act (KommAustria-Gesetz, KOG) with effect from 2004.

Relevant legal provisions¹⁸:

- **Private Television Act** (PrTV-G), Federal Law Gazette: I No. 84/2001 in the version of Federal Law Gazette I No. 71/2003: Title 6, "Digitisation", §§ 21 to 29
- **Austrian Broadcasting Act** (ORF-G), Federal Law Gazette I No. 83/2001: § 3.4: "Service provision mandate", Transmission using digital technologies
- **KommAustria Act** (KOG), Federal Law Gazette I No. 32/2001 in the version of Federal Law Gazette I No. 71/2003: §§ 9a to 9e: Digitisation fund

The legal framework for the activities of the public service broadcaster ORF is laid down in the ORF Act 2001. This includes content regulation for the programmes of the ORF. In 1993 the regulation was aligned with the EU directives and with the convention of the European Council. Private terrestrial television was made possible by the Private Television Act in which the provisions of the Cable and Satellite Broadcasting Act were also included. In 2001 KommAustria was established by the KommAustria Act. The Austrian Telecommunications Act of 2003 assigned KommAustria additional responsibilities in the regulation of communications infrastructure for the transmission of broadcasting content and additional broadcasting services.

4.1.2 Key Players

Regarding the legislation and the implementation of Austria's digitisation strategy, the following official bodies are involved:

- The Federal Chancellery
- The Digital Platform Austria
- The Austrian Communications Authority (KommAustria)
- The Austrian Regulator RTR
- The Federal Communications Board
- The Telecom Control Commission (TKK)

Federal Chancellery

The federal chancellery is heading the initiative of the digitisation of Austrian broadcasting. As a subordinate department to the Federal Chancellery the Austrian Communications Authority ("KommAustria") was set up on 1 April 2001 to regulate the broadcasting sector. It is an independent authority in the conduct of its business. The federal chancellery also initiated the "Digital Platform Austria" work group, which is an association with representatives from all stakeholders (from politics, consumers groups, media, broadcasters, electronics industry, ...).

¹⁸ Source: Introduction of digital broadcasting in Austria, Communication from the Republic of Austria to the European Commission, December 2003

Digital Platform Austria

The Digital Platform Austria work group was set up by the Austrian Federal Chancellery and will contribute to further developments in the field of digital television in Austria. Under § 21 of the Private Television Act (PrTV-G), KommAustria is to compile a Digitisation Concept for the introduction of digital broadcasting; the work group will support the regulatory authority in this process.

The key objectives of the Digital Platform Austria work group are¹⁹:

- Supporting the regulatory authority in the creation of a Digitisation Concept, with due attention to economic feasibility, to general technical and especially consumer-oriented circumstances, as well as a schedule for the transition from analogue to digital transmission;
- Promoting Austria as a media location in the interest of the communications industry, and promoting Austrian value creation in a technologically relevant field of the future;
- Submitting suggestions for the general regulatory framework of the future, especially with regard to ensuring non-discriminatory access to these new transmission platforms on fair and reasonable terms and observing equal opportunities.

Austrian Communications Authority – KommAustria

KommAustria has the purpose of leading the administration of regulatory activities in broadcasting and is responsible for the administration of broadcasting frequencies, a task which was formerly the responsibility of the telecommunications authorities. KommAustria's responsibilities are laid down in the Austrian Federal Act on the establishment of the Austrian Communications Authority. The Telecommunications Act of 2003 (TKG 2003) extended KommAustria's responsibilities to include a number of previously unresolved issues in the regulation of broadcasting communications networks and services. (§ 120 TKG 2003) Additional responsibilities include the regulation of communications infrastructure for the transmission of broadcasting content and additional broadcasting services. KommAustria's responsibilities were then extended even further to include regulatory powers under general competition law in 2002 (under the Competition Act), and in 2003 the authority also assumed responsibility for the regulation of broadcasting communications infrastructure (TKG 2003). Since the beginning of 2004, KommAustria has also been responsible for administering the Austrian federal government's press and journalism subsidies. From July 2006 onward, the commission will also act as the Regulatory Authority for Collecting Societies.

Austrian Regulatory Authority for Telecommunications and Broadcasting – RTR:

The RTR acts as the operative arm of the Austrian Communications Authority (KommAustria) as well as the Telekom Control Commission (TKK). It is split up into two specialized sections (Broadcasting and Telecommunications) and fulfils the following duties:

- Operations for KommAustria
- Operative duties assigned to RTR GmbH under the Austrian Telecommunications Act (TKG)
- Activities under the Signatures Act (SigG)
- Arbitration procedures (§ 8 KOG),
- Setup and management of a competence centre especially for media and telecommunications convergence issues
- Administration and allocation of grants from the Digitisation Fund (§§ 9a to 9e KOG) and the Television Film Fund (§§ 9f to 9h KOG)

Federal Communications Board

The FCB is the legal authority for decisions made by KommAustria and as the legal supervisory authority for the Austrian Broadcasting Corporation (ORF).

¹⁹ http://www.rtr.at/web.nsf/englisch/Rundfunk_Digitale+Plattform+Austria

Telekom Control Commission – TKK

The Commission relies for its decisions on the expertise of Rundfunk und Telekom Regulierungs-GmbH (RTR) which handles all administrative matters on behalf of the Telekom-Control-Commission.

4.2 Licensing Structure and Requirements

The invitation to tender for the planning, technical development and operation of a multiplex platform will be implemented by the regulatory authority in accordance with the digitisation strategy and available transmission capacities.

In accordance with the statutory provisions, the plans for the multiplex platform form part of the licence. Thus, instead of tendering specific transmission capacities for a limited period, the entire frequency pool for digital terrestrial television has been available for the planning of the multiplex platform. The concrete technical work involved in planning in accordance with §25.3 PrTV-G have to be carried out by the licence-holder in cooperation with the regulatory authority.

Further invitations to tender for the establishment and operation of multiplex platforms must take account of the available transmission capacities, while giving due consideration to the digitisation strategy.

The digitisation strategy in its present form only provides for further invitations to tender for the construction and operation of multiplex platforms for the period following the complete analogue turnoff (around 2010).

Prior to the invitation to tender for a multiplex platform, the regulatory authority must define in a decree the selection principles in accordance with § 24.1 PrTV-G (if there are several applicants) in respect of the digitisation strategy and of technical, economic and user-oriented requirements that a multiplex operator should meet, giving due consideration to European standards. Before a decree is enacted, Digital Platform Austria must be given the opportunity to express its opinion.

The digitisation strategy contains the following requirements for the selection principles²⁰:

- A programme offer should be broadcast which will extend beyond the TV programmes currently broadcast by means of analogue terrestrial distribution and must, from the outset, i.e. in the simulcast phase, at least include the existing TV offer to be available free of charge ("Free TV") and with improved image quality.
- From the outset, additional interactive services must be offered which will make it possible to experience the new possibilities offered by digital television (such as EPGs, digital video text etc.) giving due consideration to European software standards (MHP).
- Portable indoor and mobile TV reception should be facilitated very quickly, at least in densely populated areas.
- The objective in terms of coverage should be that at least one transmission multiplex should have full nation-wide coverage (regular operation covering more than 90%), while the second multiplex initially (during the simulcast period), concentrates on the densely populated areas (covering around 70% of population).
- The first objective is to provide a service to the densely populated areas, using the main Austrian transmitter stations, with nation-wide coverage to follow as soon as possible. The service is then to be developed sequentially in the individual provinces, with subsequent analogue turn-off. The aim is to provide 60% of the population with coverage by stationary reception after one year. Once digitisation is fully under way, the coverage area should correspond as far as possible to the current analogue service.
- The inclusion of broadcasting companies is also necessary, in particular for implementing a communications strategy

A single multiplex platform with two transmission channels have been provided for the introduction of digital terrestrial television, with the requirement that ORF 1, ORF 2 and ATV+ are broadcast in one and the same multiplex transmission channel. A call for tender and award of other multiplex platforms is planned only for the period following completion of the simulcast phase. It is currently believed that five or six transmission channels will be possible.

²⁰ Source: Digitisation Strategy, KommAustria, December 2003

In order to be able to broadcast ORF's current regional programmes and also other programmes in specific regions, these transmission channels must be separated in programming terms, at least at the level of the provinces (Länder).

The objective is to provide at least one nation-wide transmission channel (objective for regular operation: over 90% coverage), while a second transmission channel will initially (i.e. for the duration of the simulcast phase) concentrate on the densely populated areas. This objective can only be achieved if it takes account of the first analogue turn-off and switchover plans.

4.3 Licensing Process

The technical infrastructure for a national terrestrial TV network has been separated early 2005 from ORF's programme activities and relocated to a new company named ORS (100% ORF owned). ORS now is the only licence holder for operating the first DTT multiplexes.

Invitations to tender and the award of licences for the multiplex platforms have been based on the digitisation strategy. The law provides for granting 10-year multiplex licences. Licences have been awarded by a comparative selection procedure ("beauty contest", § 24 PrTV-G). The possibility of obtaining a licence has not been reserved to broadcasters nor have they been excluded. Before issuing an invitation to tender, the regulatory authority had to issue an ordinance setting out the principles on which selection will be based in accordance with § 24 PrTV-G.

The following conditions of use have been laid down by the law (§ 25.2 PrTV-G)²¹:

- Broadcasting of the programmes of the Austrian Broadcasting Corporation, the programme of the private national broadcaster and one additional TV programme;
- Most of the data volume to be used for television programmes (data rates for digital teletext are limited to 30kbps, for MHP to 400 to 600kbps);
- Charging of transmission costs pro-rata;
- Non-discriminatory use of EPGs;
- Identical data rates for all programmes in an EPG;
- Non-discriminatory representation of individual programmes and additional services;
- Technical quality conforming to European standards and a continuous technical expansion of the platform.

The government awarded the broadcast network operator ORS the licence to launch DTT services in Austria. It had been the only application received by the government²². Some reasons behind this limited interest are:

- High complexity of transparent mux management by mixing public service and commercial broadcaster;
- Different coverage objectives of public and commercial broadcaster (90% versus 95%);
- High risk-level due to strong position of satellite and cable;
- Limited added-value (from end-user perspective) due to small number of initial programmes.

By 1 March 2007, MUX A had to reach at least 60% of households and its population coverage has to increase to 90% by March 2009.

Phase two will see the launch of Multiplex B in 2007. The programmes carried in MUX B had to be determined in a tender where programmes that focus on Austrian related contents have been preferred. MUX B will be offered in Vienna as well as the provincial capitals and their surroundings²³.

In July 2007, six channels were announced in Austria's second digital terrestrial multiplex, expected to go live in October 2007. The multiplex will comprise culture channel 3sat, Sport Plus, German broadcasters Pro7 and Sat.1, Euronews and the Austrian commercial channel ATV. Thirty-two applications were received for Austria's second DTT multiplex. Sixteen of the applications were for TV channels and 16 for radio stations although TV took priority due to the lack of spectrum space²⁴.

²¹ Source: EU Communication from the Republic of Austria to the European Commission, December 2003

²² Source: <http://www.heise.de/newsticker/meldung/70075>

²³ Source: DVB Scene Dec 2006 Ed 20.

²⁴ Source: <http://www.broadbandtvnews.com/today/?p=1535>

As there have been more applications than available channels, the following selection criteria – in line with the KommAustria regulation – have been applied²⁵:

(1) Type of Service:

- TV programmes have priority over radio programmes and supplementary services
- Programme-related supplementary services have priority over non-related services

(2) Service content (all criteria are equally relevant):

- Contribution to increasing the programme and opinion variety within the DVB-T spectrum
- Larger share of own programming
- Larger demand by consumers
- More Austria-specific content regarding information, education, culture, contemporary art, entertainment including sports
- More regional content
- Offering free for all content (instead of pay-TV)

(3) Economic Viability

4.4 Licence Fees and Other Payments

In line with the Austrian constitutional law, there are no fees neither for spectrum usage nor for spectrum licensing of broadcasters (to “secure the independence of broadcasting”)²⁶. Section 3.4 of this report shows a brief cost analysis on a per channel basis depending on different levels of geographic coverage. The mux operator ORS is obliged to provide a transparent, non-discriminatory and cost-based approach to the transmission fees. For Mux B, current estimated annual fees for country-wide transmission are € 38,800 per 100 kbps²⁷, which adds up to an annual fee of €1 million to €1.5 million per TV channel depending on the required data rate.

4.5 Technical Considerations

Austria implemented the following technical specifications for first 2 multiplexes:

- Modulation: 16QAM
- Code-Rate: 3/4
- Guard-Interval: 1/4

This leads to an effective data rate of 14.93 MBit/s per multiplex, which is used for 3 TV programmes. The programme encoding uses the MPEG-2 standard. The main reason for this is the relatively low cost of set-top boxes based on the MPEG-2 standard. While MPEG-4 would allow for a much higher number of TV channel (3 to 4-times more channels within the same spectrum), the initial priority has been on the provision of a cost-efficient solution, as terrestrial broadcast has to consider low income households.

A migration towards MPEG-4 might be considered with the licensing of the next multiplexes as soon as the analogue turn-off has been completed in 2010.

4.6 Realisation of Policy Objectives

Current Status

²⁵ ORS: Verfahrensrichtlinien zur Ermittlung von Interessenten für die terrestrische Verbreitung von digitalen Programmen und Zusatzdiensten (MUX B), February, 2007

²⁶ Source: http://rtr.at/web.nsf/deutsch/Rundfunk_Rundfunkrecht_Verordnungen_RFVerordnungen_RFGV

²⁷ Source: Bedingungen für die Nutzung der Kapazitäten der zweiten MUX-Bedeckung (MUX B), ORS, 2007

By mid 2007, the number of DTT penetration reached around 200,000 households in Austria (around 6 percent of total TV households), of which around 40 percent use MHP-enabled set-top boxes. Especially, the initial sign-up phase with the €40 subsidy vouchers has been very successful.

While the introduction of DTT has seen few problems, many households moved towards digital satellite receivers: When faced with the decision to buy a set-top box for terrestrial TV, many households decided to invest in a satellite receiver, which offers a greater programme variety. This trend is expected to continue with the further roll-out of the next multiplexes and the analogue switch-off. Still, DTT will offer an attractive supplement for 2nd or 3rd TVs or for TV-cards or USB-based receivers used with personal computers or laptops.

Success Factors

Overall, DTT in Austria has been implemented successfully in a short timeframe. The main contributors to this success have been:

- Country-wide co-ordination of all interest groups through the digital platform work group headed by the federal chancellery;
- Thorough preparation of all aspects of such a complex project (from licensing to subsidisation of set-top boxes);
- Short simulcast phase of 6 to 12 months allowing for efficient and focussed campaigns;
- Strong involvement of retail stores in educating customers, in promoting the new technology, and in deducting the subsidy from the retail price of set-top boxes;
- Clear guidelines for coverage objectives and financing of this coverage;
- Certification and official classification of set-top boxes.

The last point is of special importance: Initially, many MHP-enabled set-top boxes sold to end-users had severe software problems, which lead to significant end-users complaints and bad publicity. A thoroughly managed process for quality assurance and certification is therefore very essential.

Protection of local and national programmes

By law, the public service broadcaster has a coverage obligation for all of Austria. This was one of the main reasons, to include the two public service programmes and one national commercial programme in the first multiplex. The selection criteria for the second multiplex included a selection based on the provision of national or local content.

As shown in chapter 1, around 50 percent of all viewed programmes come from neighbouring Germany. However, with around 35 different programmes this market is very fragmented. Especially the use of Austria-specific advertising windows generates additional revenues for these German TV broadcasters. So far, only the ProSiebenSat.1 group produces a small daily Austria-specific news programme. Many of the international programme providers are not interested in a terrestrial distribution in Austria, as the additional costs make it difficult to develop a viable business case, especially in the light of the wide availability of (much cheaper) satellite and cable TV capacity.

One main driver for the acceptance of DTT has been the introduction of value-added services based on MHP multi-text platform. Around 30 percent of all set-top boxes sold in Austria so far support these additional features.

5 Switch-off Strategy

5.1 Strategy Overview

The introduction of DTT is divided in 4 distinct phases²⁸:

Phase 1: Preparation (until end of 2005)

- Test trials, frequency planning, call for tenders concerning the MUX operator

Phase 2: Introduction (September 2006)

- Assembling of DVB-T networks in cities and regional centres
- Condition: 60% coverage (population) after one year

Phase 3: Switch over (2007 to 2010)

- Regional switchover after a short simulcast phase in each region (6 to 12 months)
- Regional ATO with coverage 90% fixed reception and ~25% portable indoor

Phase 4: Analogue Turn Off (2010)

- Six nationwide (!) multiplexes will be possible
- Call for tender for operation of further MUX platforms

Austria has opted for a very short SimulCast period of 6 to maximum 12 months per region. This allows for a rapid introduction of the new technology with two main PR campaigns: one initial campaign to address the early adopters by giving them incentives to move to the new technology (see Chapter 2 on the subsidy of €40 for the first 100,000 customers). A second main migration phase takes place a few months before the analogue switch-off: The analogue TV programmes show an inserted ticker-band informing the viewers about the imminent switch-off of the analogue transmitter station and what they need to do to migrate to a digital set-top box.

A key player in facilitating this rapid migration has been the retail association and the retail stores they represent. These retail stores have a key role in educating and informing customers about the benefits of the new technology as well as the financial benefit of the initial subsidy vouchers (the subsidy amount of €40 is subtracted in the retail store – the dealer then claims back the voucher from the GIS services company).

²⁸ Source: DICE Conference Vienna, 2006, Dr Alfred Grinschgl (CEO of RTR)

Acronyms

ARD	Arbeitsgemeinschaft der öffentlich-rechtlichen Rundfunkanstalten der Bundesrepublik Deutschland (Consortium of public service broadcasting institutions of the Federal Republic of Germany)
ATO	Analogue Turn-Off
BCI	Broadcasting Commission of Ireland
DFFG	Digitales Fernsehen Förder GmbH (Digital TV Support Ltd.).
DTH	Direct To Home
DTT	Digital Terrestrial Television
DVB-T	Digital Video Broadcasting - Terrestrial
DFFG	Digitales Fernsehen Förder GmbH (Digital TV Support Ltd.).
EPG	Electronic Programme Guide
FEEI	Fachverband der Elektro- und Elektronikindustrie (Trade Association of the Electrical and Electronics Industry)
Kabel1	Kabel eins (Cable One)
KOG	Komm Austria Gesetz (Austrian Communications Authority Act)
MHP	Multimedia Home Platform
MUX	Multiplex
ORS	Österreichische Rundfunksender (Austrian Broadcasting Services, Network Operator)
ORF	Österreichischer Rundfunk (Austrian Broadcasting Corporation for Radio and Television)
ORF-G	Österreichischer Rundfunk Gesetz (ORF Act/ Austrian Broadcasting Act)
Pro7	ProSieben (German commercial TV channel, part of ProSiebenSat.1 group)
PrTV-G	Privatfernsehgesetz (Private Television Act)
RTR	Rundfunk & Telekom Regulierungs – GmbH (The Austrian Regulatory Authority for Telecommunications and Broadcasting)
RTL	Radio Television Luxembourg
SAT.1	SatEins, (German commercial TV channel, part of ProSiebenSat.1 group)
SigG	Signaturgesetz (Signatures Act)
TKK	Telekom Control Kommission (Telecom Control Commission)
TKG 2003	Telekommunikationsgesetz 2003 (Telecommunications Act 2003)
ZDF	Zweites Deutsches Fernsehen (Second German Television – public broadcaster)