Analogue Switch-off

Strategies to end analogue terrestrial television in Europe

DigiTAG

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Introduction

The move to an all-digital broadcast environment is well underway in Europe. Across all television distribution platforms, digital services are increasingly replacing analogue services as the technology of choice given the enhanced service offering and efficiency. Compared with terrestrial analogue, digital terrestrial television (DTT) offers an improved spectrum efficiency which can be used to provide a variety of new service that include mobility, interactivity, high-definition TV, enhanced video and audio quality as well as increased programme choice.

Already many countries in Europe have launched DTT services and began the process of analogue switch-off (ASO) on the terrestrial platform. However, the process of analogue switch-off is not simple. The benefits of analogue switch-off must be clearly thought trhough before such a process can begin. Careful planning will help determine when a country can begin analogue switch-off and ensure a smooth transition to an all-digital environment. Those television households that rely on the analogue terrestrial television platform will need to find a new means of accessing television among the available digital platforms to ensure against a disruption of services.

Given the different television markets within Europe, each country will formulate a unique digital switchover approach and timetable for analogue switch-off. Current proposals suggest that analogue switch-off will take place in Europe between 2008 and 2015 with most countries ending analogue terrestrial television around 2012.

This timetable corresponds to the recommendations made by the European Commission. It is also consistent with the new plan that national administrations have agreed to regulating frequency usage in the VHF and UHF radiofrequency bands. The Geneva 2006 (GE-06) Agreement determines how countries will share frequencies in an all-digital broadcast environment set to commence on 17 June 2015.

This DigiTAG Handbook examines the factors which affect analogue switch-off, the approaches which may be selected in different markets, and the implications for the ‘stakeholders’ in the television broadcast supply chain. It assesses when analogue switch-off will likely be completed and provides some recommendations for easing the process. Finally, the Handbook gives an overview of the current status of digital switchover in Europe.

Some of the information used in this Handbook has been derived from a joint EBU/DigiTAG study published in late 2005.

Factors affecting analogue switch-off

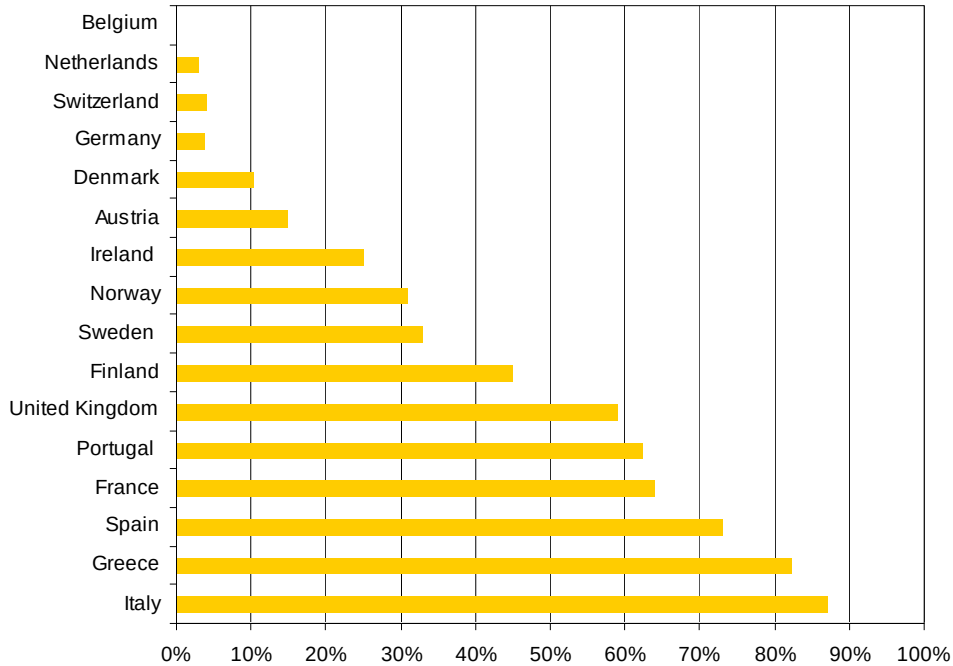
Deciding when a country is ready for analogue switch-off will depend on a variety of factors. These factors include the size of the terrestrial market, the penetration of DTT services, the coverage area for DTT services and the decisions made by governments at a pan-national level.

Size of the terrestrial television market

Traditionally, viewers received their television services from the terrestrial platform. However, with the emergence of new television delivery platforms such as cable and satellite, viewers have been offered alternative means of receiving television service and have thus decreased their dependency on the terrestrial platform.

The size of the terrestrial television market in a given country will affect analogue switch-off since the viewers relying on the analogue terrestrial television platform will need to find alternative means to access television. The time needed to convert these households will be greater in markets with a high number of terrestrial households compared with countries with few analogue terrestrial households.

Share of terrestrial-only households



Source: EBU

DTT Penetration

It can generally be expected that viewers will replace their analogue terrestrial services with DTT services although some may prefer alternative delivery platforms. As these analogue households increasingly adopt DTT services, analogue switch-off can begin.

In an open market, viewers ultimately determine the speed of DTT penetration. In countries that have launched DTT services, the appeal of the service offering (content) and the cost of the service (price of the set-top box / monthly subscription) have proven to be the most important factors influencing viewer adoption of DTT services.

In countries with few households depending on the terrestrial platform, the market for DTT services has been small. However, with an attractive DTT offer and successful marketing, the

digital terrestrial platform has proven popular in these markets, especially for secondary television sets. This has been especially true in Germany.

The table below provides an estimate of DTT penetration in some countries that have launched full DTT service platforms:

Country	DTT Penetration (end 2005)	Years since full DTT launch (50% population coverage)
United Kingdom	25%	7
Sweden	14%	6
Spain	5%	4
Finland	25% (mid 2005)	4
Italy	16%	2
Germany	8% (varies by region)	2
The Netherlands	2%	2
France	6%	<1

DTT penetration is generally calculated on the principle that at least one television set in a given household offers access to DTT services. However, it does not consider the fact that many households generally have more than one television set and that all these television sets, as well as video recorders, will also need to be converted prior to analogue switch-off. For some families, digital switchover can risk becoming an expensive endeavour.

DTT Coverage

Often considered a replacement services to analogue terrestrial television, DTT will likely have a corresponding coverage level. A high DTT coverage level offers a maximum number of viewers with the possibility of adopting these services. The speed at which a DTT network can be rolled out will depend upon available frequencies and the man-hours needed for implementing the conversion.

In many countries, governments have set a requirement for a minimum DTT coverage level. In the United Kingdom, for example, the ultimate DTT coverage level required must equal the existing analogue terrestrial coverage level. However, such a high level of coverage may not be judged cost-efficient, especially in sparsely populated areas, nor possible prior to analogue switch-off.

Country	DTT population coverage of at least 1 multiplex (end 2005)
United Kingdom	80%
Sweden	93%
Spain	80%
Finland	99.9%
Germany	60%
The Netherlands	50%
Italy	70%
France	50%

Decisions made at the international and European level

While the digital switchover process is managed at the national level, factors outside a nation's borders can influence the process. At the international level, treaties approved by national administrations under the auspices of the International Telecommunication Union (ITU) will influence frequency allocation. At the European level, members of the European

Union (EU) will need to adhere to EU Directives and comply with the decisions made by the European Commission (EC).

Geneva 2006 Agreement

Since June 2006, a new plan regulates frequency usage in the broadcast bands of Europe, Africa and parts of Asia. The Geneva 2006 (GE-06) Agreement establishes two separate plans for an analogue and digital environment in these regions of the world. It is a binding international treaty signed by national administrations and registered with the United Nations.

In an all-digital environment, GE-06 takes into account 72,761 country requirements for the transmission of DVB-T and T-DAB services in frequency Band III (174-230 MHz) and DVB-T services in frequency Bands IV/V (470-862 MHz). Generally, countries have been allocated 3 T-DAB and 1 DVB-T "coverage layers" in the Band III and 7-8 DVB-T layers in Bands IV/V. In Europe and parts of Asia, GE-06 replaces the existing Stockholm 1961 (ST-61) Plan which regulated frequency usage in an analogue broadcast environment.

GE-06 sets 17 June 2015 as the date when countries will no longer need to protect the analogue services of neighbouring countries and can freely begin using the frequencies assigned to them for their digital services. It is possible for countries to begin implementing the GE-06 digital plan during the transition period (between 17 June 2006 and 17 June 2015), however, doing so will require the prior agreement of neighbouring countries that may be affected.

The end of the transition period is not a guarantee that analogue switch-off will take place throughout a given country. But because analogue services will no longer be possible along the borders, it could serve as an impetus to switching off analogue services country-wide. The later date of 2020 has been set for the end of the transition period in some African and Arab countries for analogue services in Band III.

European Commission

The EC has strongly supported digital switchover since it corresponds with many of its expressed policies on efficient use of spectrum and the possibility of introducing a market-led approach to spectrum management. Recognising the diversity of the European television market, it has called on its Member States to manage the process and established itself as an information coordinator and guarantor of EU law.

In a communication published in May 2005, the EC recommended that Member-States phase out analogue terrestrial broadcasting by 2012. Advocating a coordinated approach to analogue switch-off, the EC recognised that the full benefits of digital switchover cannot be achieved until all countries in a given area shut off their analogue signals.

As guarantor of EU law, the EC has actively ensured that the rules governing competition and state-aid have been upheld. In Berlin-Brandenburg, the EC deemed illegal the financial compensation provided to commercial broadcasters by the media regulator since it was liable to distort competition. The EC has since opened an enquiry into similar funding in the Länder of Baviaria and North Rhine-Westphalia.

The EC has also opened enquiries into the state funding given to the Swedish network operator Teracom and the government subsidies given to Italian television households for the purchase of interactive set-top boxes.

Yet financing digital switchover is not completely prohibited. The EC has stated that policy intervention is possible under certain circumstances so long as it contributes towards general interest goals. However, further clarification of "general interest goals" may be necessary.

Different approaches to analogue switch-off

Several approaches to analogue switch-off are possible. However, the approach will usually be predicated on the approach used for launching DTT services. In launching DTT services, planners will need to determine the duration of the simulcast period when analogue and digital terrestrial television services are simultaneously transmitted. Although the cost of simulcast is high, its duration will be determined by the number of households that depend on the analogue transmissions and how quickly these households can be converted to an alternative television service.

Types of DTT launches

In a **national launch of DTT services**, planners provide DTT services to a maximum number of households prior to commencing analogue switch-off. As digital television services increasingly replace analogue terrestrial services, analogue switch-off can begin.

In a **regional launch of DTT services**, the full roll-out of the DTT platform is dependent upon analogue switch-off. DTT services are launched alongside analogue services for a short period of time, usually a period of 6-9 months, until analogue switch-off takes place and the full DTT platform is launched. This approach is often used when frequencies are scarce.

Phased shut-off of analogue services

In a phased approach, analogue switch-off takes place in a given country by region. DTT planners prepare a timetable detailing when analogue transmitters will be shut off in the different regions of the country.

This approach provides several benefits. Firstly, DTT planners can apply the lessons learned in one region to improve the process in another region. Should something go wrong, the damage is limited to a single region. Secondly, the released frequencies can be re-used in a neighbouring region in order to increase its DTT coverage and expand the DTT service offering. Finally, this approach allows DTT planners to spread the cost and effort of digitalisation across a significant period of time.

Amongst countries which provided a national launch of DTT services, this approach is currently underway in Sweden and planned for use in the United Kingdom. Other countries likely to use this approach include Spain, France, Italy and the Czech Republic. In countries which utilised a regional launch of DTT services, this approach was used in Germany, where the removal of services generally affected no more than 10% of a given region's population.

Nation-wide shut-off of analogue services

In a national approach, analogue terrestrial television services are ended at the same time over the whole country. Such an approach allows all viewers to simultaneously benefit from the advantages of digital switchover, ensuring that all viewers are treated equally and given the same access to all services. It is likely that this approach will be used in Finland and Denmark.

Partial shut down of analogue services

In a partial approach, some analogue terrestrial television services are ended in order to make frequencies available for a subsequent DTT launch. This eliminates the need for prolonged analogue/digital simulcasting period. However, because the DTT launch is preceded by analogue switch-off, viewers will temporarily lose access to some terrestrial services until they are restored on the DTT platform. This approach has been used in Switzerland where less than 10% of households are terrestrially dependent.

Implications of analogue switch-off

Analogue switch-off will impact the entire broadcast industry chain, from service providers to viewers. The key will be to minimize the costs of analogue switch-off while simultaneously reaping its benefits. Its success will largely depend upon achieving consensus among all the stakeholders which include government, broadcasters, network operators, manufacturers and viewers.

Government

The government is responsible for establishing the legal framework for digital broadcasting and, in most countries, setting the date for analogue switch-off. Analogue switch-off can provide the government with the possibility of generating revenue should frequencies be available for auction or sale as part of the so-called digital dividend. However, shutting down analogue transmissions can have significantly negative political ramifications should the process not succeed. A poorly managed process without contingency planning can leave viewers without television and serve as a political liability. Segments of the population may contest analogue switch-off and weaken the position of the government.

Governments may find it necessary to fund parts of the digital switchover process. Such funding could be necessary to support viewers, broadcasters and/or network operators.

Broadcasters

With the flexibility offered by an all-digital broadcast environment, broadcasters can introduce more programme choice, interactive services, mobility, enhanced video and sound quality and high-definition television (HDTV) depending on the perceived needs of their viewers. Yet the introduction of new services will need to be financed by broadcasters.

Public service broadcasters (PSBs) have generally served as strong supporters of DTT service launches and have benefited from the opportunity to provide viewers with more services on the terrestrial platform. Commercial broadcasters on the analogue platform have demonstrated more reticence. With an increased programme offering and the emergence of new broadcasters, traditional broadcasters risk increased competition which can dilute their market share and lead to a reduction in advertising revenue. Analogue switch-off can produce a similar situation should additional broadcast frequencies become available.

Broadcasters on the analogue terrestrial platform will want to ensure that viewers continue to receive their services following analogue switch-off. Hence, they may wish to have a significant role in managing the process. Given the high cost of simulcasting, broadcasters will stand to benefit from analogue switch-off since they may reduce their television transmission costs.

Network operators

Network operators are responsible for managing the terrestrial network infrastructure. They ensure DTT service roll-out and coverage while simultaneously maintaining the analogue terrestrial platform. Digital switchover requires that network operators make significant investments to upgrade and digitalise their network. Analogue switch-off must be carefully planned to provide network operators with sufficient time to muster the necessary man-hours (and good weather) for the infrastructure replacement.

With analogue switch-off, network operators will lose the income generated from analogue transmissions. This gives a strong motivation for them to support the re-use of these frequencies for new services, including DTT services.

Manufacturers

The end-to-end digitalisation of the broadcasting chain brings new opportunities for manufacturers to develop and sell their products to consumers, broadcasters and network operators.

Yet, manufacturers of consumer electronic products have faced several challenges in the DTT market. With a variety of different country set-top box specifications, manufacturers have been required to design products to accommodate each market. Marketing campaigns that have primarily promoted inexpensive DTT receivers may have inadvertently hampered the sale of higher end DTT products, including televisions embedded with DTT tuners (iDTVs). This has resulted in the continued widespread sale of analogue television sets.

Delays in the timing of DTT launches have resulted in costs to manufacturers who have found themselves with large product volumes that could not be brought to the market. Manufacturers will want to avoid a similar situation with analogue switch-off and will instead benefit from a clear timetable to manage product volumes successfully. It can be expected that as an analogue switch-off date approaches, demand for DTT receivers will rise sharply. Manufacturers will want to avoid shortages that could unintentionally lead to delays.

Viewers

Compared with analogue TV, DTT may offer viewers many benefits including more programme choice, portable and mobile television reception, interactivity, wide-screen viewing as well as potentially enhanced picture and sound quality. Analogue switch-off will make frequencies available to expand the DTT platform or offer new services.

The benefits of DTT services will likely encourage viewers to purchase iDTVs and DTT set-top boxes. However, without government subsidies, the cost of digital switchover could become expensive given the need to purchase converters for all analogue television sets and video recorders. In some cases, viewers may also need to change their roof-top antennas or, following analogue switch-off, adopt alternative television services should DTT not be available where they live.

Not all viewers will be happy to switch to digital services as they may be comparatively satisfied with the offer on the analogue terrestrial platform. Others may resent the imposition to purchase a digital converter in order to continue receiving television services. For some, especially the socially isolated, information on digital switchover may not be readily available. These groups may make analogue switch-off more challenging, especially for the government, depending on their importance and ability to make their opinions heard.

Assessment and recommendations

The status of analogue switch-off varies widely across western Europe. While some countries have begun shutting down their analogue networks, others have yet to launch DTT services.

Announced analogue switch-off dates

Many countries have announced a date for switching off analogue television. However, these announcements can be divided into three types of different implementation status:

- Obligatory - an announced date mandated by the government and made obligatory by law
- Firm - an announced date based on consensus from government and industry groups and usually issued with an ASO strategy and/or timetable
- Target - an announced date based on early estimations

The table below provides an overview of the announced analogue switch-off dates well as the implementation status of the announced date in those countries that have launched DTT services or are expected to do so in the coming year.

Country	DTT launch	ASO date	Status of ASO date
United Kingdom	1998	2012	Firm
Sweden	1999	2008	Obligatory
Spain	2000	2010	Target
Finland	2001	2007	Obligatory
Switzerland	2001 (commercial DTT services)	2008	Firm
Germany	2002	2009	Firm
Belgium	2002	2012	Target
The Netherlands	2003	2007	Firm
Italy	2003	2012	Target
France	2005	2011	Target
Malta	2005	2010	Target
Czech Republic	2005	2010	Target
Denmark	2006	2009	Obligatory
Lithuania	2006	2012	Target
Greece	2006	2012	Target
Slovenia	2006	2011	Target
Austria	2006	2010	Firm
Estonia	2006	2012	Target
Norway	2007	2009	Obligatory

Expected analogue switch-off dates

It can be expected that analogue switch-off will take place in three phases across western Europe. A first group of countries will complete analogue switch-off between 2006 and 2008. Among these countries, Finland and Sweden have a large number of households that rely on the terrestrial platform but have offered DTT services for the past six years. Germany and the Netherlands have very few households that rely on the terrestrial platform.

In the second group of countries, analogue switch-off will take place between 2009 and 2011. The number of households relying on the terrestrial platform is relatively low, although exceptions can be made for Austria and Norway.

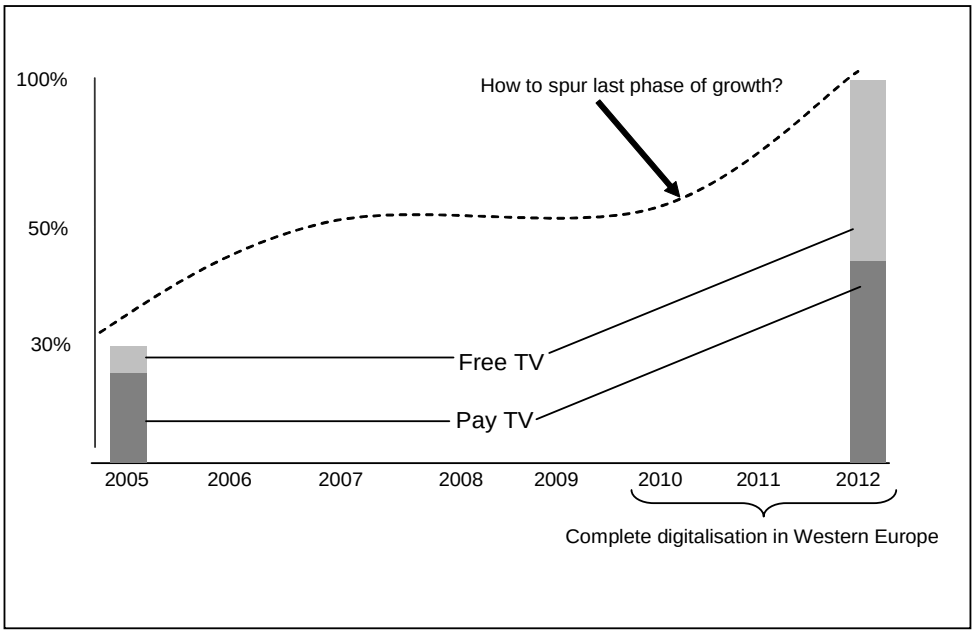
Finally, the members of the third group consist of countries with large populations and a high number of households relying on the terrestrial platform. These countries will need to carefully plan analogue switch-off in order to ensure a smooth process with minimal disruption for viewers. Analogue switch-off is unlikely to be completed prior to 2012.

	ASO date (official or estimated)	Expected range
Fast Track		
Finland	2007	2006 - 2008
Sweden	2008	
The Netherlands	2007	
Germany	2008	
Middle term		
Belgium	2010	2009 - 2011
Norway	2009	
Denmark	2009	
Switzerland	2008	
Austria	2010	
Last		
Italy	2012	2012 - 2015
United Kingdom	2012	
France	2011	
Spain	2010	
Portugal	2012	
Greece	2015	

Source: EBU

While digital switchover is currently driven by the market, this growth may plateau at a certain level. The key question will be how to spur the last phase of digital penetration in order to allow for analogue switch-off.

Digital TV Penetration Scenario in Europe (source EBU)



Various methods can be used to drive digital penetration and prepare for analogue switch-off. Because ending analogue terrestrial television can have brutal consequences without sufficient preparation, the suggestions below can help reduce some of the risks.

All actors on board

Analogue switch-off will require the active participation of all stakeholders in terrestrial broadcasting. National administrations, broadcasters, network operators and manufacturers will all need to support the initiative. Working together will help minimise disruption for viewers. Already, many countries have set up committees tasked with coordinating analogue switch-off with all stakeholders represented.

Strong leadership

The decision to stop analogue television services is not easy. Leadership is required to support and affirm when and how analogue switch-off will take place. This can provide the necessary credibility to the process and help avoid unnecessary delays. While the government can provide such leadership, it is also possible that a switchover commission can do so.

Effective communications strategy

Viewers will need to have access to adequate information in a timely fashion. They will need to be informed on the launch of DTT services, the availability of other television platforms and the date when analogue terrestrial television will end. Successful methods used to reach viewers have included advertisements, television banners, letters sent to television households, web portals and brochures. Another successful approach has been to brief consumer electronic resellers who can also provide guidance to viewers.

Sufficient financial resources

While the cost of digital switchover will vary among countries, having available the necessary resources can help ensure maximum preparedness. These resources will most notably need to be significant for the group responsible for managing analogue switch-off. Funding can be used for communication and marketing campaigns as well as the purchase of set-top boxes for vulnerable segments of the population.

Additional resources can also be used to provide incentives to help accelerate the analogue switch-off process. For example, subsidies can be distributed to viewers for the purchase of set-top boxes or to broadcasters to develop appealing content on the DTT platform. However, these types of additional resources must be judged to be proportional and of general interest in accordance with the European Union's competition laws.

Availability of DTT receivers

The European market for DTT set-top boxes seems to be rather healthy with a wide range of receivers available, offering a large choice of features and at all retail price points from as little as 40 Euros. More recently there are signs that the iDTV market is also picking up with some manufacturers ceasing production of analogue-only television sets.

In the United States and Taiwan, governments have mandated that all television sets of a certain minimum size must be able to receive digital signals. Although such policy intervention may limit the number of new analogue-only television sets of larger sizes that enter into the market, such regulation is unlikely to be approved in Europe.

Conclusions

Throughout Europe, countries are preparing for an all-digital broadcast environment. Replacing analogue television services on the terrestrial platform with digital, national administrations are hoping to make more efficient use of the spectrum. While this efficiency may allow for frequencies to become available as part of the *digital dividend*, the size and availability of this dividend will vary widely.

National administrations have agreed how they will share the broadcast radiofrequency bands in an all-digital broadcast environment. The next task facing national administrations is reaching this goal by the 2015 deadline. Already, many countries have launched their DTT services and either begun or planned for analogue switch-off.

The key question remaining is how any available digital dividend will be used. At this stage, national administrations have allocated the dividend for T-DAB and DVB-T services to extemd the coverage of DTT services and, in some cases, offer new services to make the DTT platform more enticing.

But as analogue switch-off progress and more viewers adopt DTT services, it may also be necessary to launch new broadcast services on the terrestrial platform, such as HDTV or mobile television using the DVB-H standard. These are the questions that regulators will need to tackle in the coming years.

Appendix

DTT status in Europe

Belgium

Limited free-to-air DTT services are available since the launch in 2002. DTT coverage has been extended with full population coverage achieved in the Flemish Community and expected in the French Community by 2007.

The Flemish Community has indicated that it is likely to begin analogue switch-off, at the latest, in 2010 and complete the task by 2012.

Czech Republic

The public service broadcaster, Czech Television, officially launched free-to-air DTT services on 21 October 2005 in Prague. Since then, coverage has been extended to 35% of the population and the broadcast regulator RRTV has allocated further DTT service licenses to commercial broadcasters. By the end of 2006, it is expected that viewers will be able to access 12 television programme services on the DTT platform.

In August 2006, the Czech Telecommunications Office (CTU) announced that analogue switch-off will take place in October 2010. However, this has provoked debate among broadcasters, as commercial broadcasters on the analogue platform have stated their preference for a later date while broadcasters on the DTT platform oppose such a delay.

Denmark

Launched on 31 March 2006, the DTT platform offer viewers access to the services from the public service broadcasters TV2 and Danmarks Radio on a single multiplex. A further three multiplexes are expected to be launched eventually, although dates and services have not yet been announced. It is likely that the full DTT platform will provide a combination of free to air and pay DTT services.

Analogue switch-off is mandated by law and is set to take place on a national level in October 2009.

Finland

First launched in August 2001, DTT services allow viewers to access 12 free-to-air and 4 pay television programme services on 3 national multiplexes. The first two multiplexes provide services to nearly 100% of the population while the third multiplex has coverage of 78% of the population. A fourth multiplex is likely to be launched by October 2006 while DVB-H services are expected to be launched on a fifth multiplex in December 2006.

Analogue switch-off is mandated by law to take place on 31 August 2007 at a national level. However, an issue may arise from the need to ensure that cable households are converted to digital in order to access digital public service programmes. Converting these households to digital may prove difficult given their current (low) level of digital penetration.

A consortium of broadcasters and network operators jointly published a report entitled *Transition into Digital Time* that provides key recommendations for analogue switch-off. The report also produced a detailed timeline and defined the responsibilities of each group involved in analogue switch-off.

France

DTT services were first launched on 31 March 2005 and now offer viewers access to 18 free-to-air television programme services in addition to the services available on the pay-DTT platform. Unique to the French market, the free-to-air platform uses the MPEG-2 video compression standard whereas the MPEG-4 AVC standard is used for the pay platform.

Since June 2006, 58.5% of the population can access these services and planning is underway to increase the population coverage to 70% by April 2007. A free-to-view satellite service offering viewers with access to the same service as are available on the free-to-air DTT platform is expected to be launched in December 2006.

A recent government proposal sets 30 November 2011 as the date for the completion of analogue switch-off. It is expected that it will take place on a region-by-region basis commencing in March 2008. The broadcast regulator, Conseil Supérieur de l'Audiovisuel (CSA), is expected to publish the roadmap for analogue switch-off by the end of the year.

Germany

In August 2003, Berlin-Brandenburg became the first metropolis in the world to complete digital switchover. DTT services were launched alongside the existing analogue services and, following a short simulcast period, analogue services were switched off.

Other regions in Germany have followed this approach and DTT services are now available in Berlin Brandenburg, North Rhine Westphalia, northern Germany, Bavaria, Mecklenburg-Vorpommern, Baden-Württemberg and Hesse. Complete analogue switch-off is expected by 2010, if not earlier.

While the DTT offer varies between regional states (Länder), viewers can generally access 24 free-to-air television programme services provided by commercial and public service broadcasters. However, issues may arise in launching DTT services in areas with a small population since commercial broadcasters may not want to join the DTT platform. This may mean that viewers actually lose some services following analogue switch-off.

Greece

The public service broadcaster ERT launched a trial DTT service in January 2006 which has since served as the basis for official DTT services. Services are available to 65% of the population. ERT launched the first digital service with special programmes designated for the hearing- and visually-impaired.

Italy

First launched in December 2003, the DTT platform offers 30 free-to-air television programme services on 7 national multiplexes in addition to local services. Approximately 70% of the population can access at least 6 multiplexes. In addition, 3 Italia has launched DVB-H services in June 2006 while Mediaset is expected to launch its DVB-H services in October.

Until 2005, the government provided viewers with a subsidy to use towards the purchase of interactive set-top boxes, as opposed to cheaper "zapper" receivers. This has encouraged the

widespread adoption of MHP-enabled set-top boxes. A successful pay-per-view (PPV) offer, launched in January 2005, has also helped boost the sales of DTT set-top boxes.

While initially planned for 31 December 2006, analogue switch-off has been postponed and the recently elected government is expected to announce a revised timetable. Sardinia and the Aosta Valley have been selected to serve as the pilot regions for analogue switch-off.

Luxembourg

Nationwide DTT services were launched in April 2006 with the full platform available in June 2006. Analogue switch-off is expected to take place on 1 September 2006.

Malta

The broadcast network operator Multiplus launched a pay DTT platform in July 2005 offering viewers access to up to 35 television programme services. Analogue switch-off is scheduled to take place in 2010.

The Netherlands

DTT services have been available since April 2003 as a subscription service offering over 25 television service programmes. While it is now possible for 50% of the population to access DTT services, achieving full population coverage with the current service offering will not be possible without analogue switch-off.

The government had initially announced that analogue switch-off would take place on 30 October 2006. However, with elections now expected in October, analogue switch-off will likely be postponed.

Spain

Since the re-launch of DTT services on 30 November 2005, approximately 80% of the population can access 20 free-to-air national television programme services, in addition to regional and local services. This re-launch follows a failed attempt to launch a pay DTT platform in May 2000.

Alongside the launch of DTT services, the analogue terrestrial television platform has also undergone much change with the launch of a new channel and the broadcasting of the Canal+ channel as a free-to-view service.

The government has set analogue switch-off for 3 April 2010, nearly three years earlier than the initial date set by the previous government. The autonomous region of Catalonia has announced plans to complete analogue switch-off by November 2009 and thus become the first all-digital region in Spain.

Sweden

Launched on 1 April 1999, the Swedish DTT platform provides viewers access to over 30 television programme services on 6 multiplexes. DTT services are available to 90% of the population with the multiplex allocated to the public service broadcaster SVT expected to reach 99.8% of the population by the end of 2007. The pay DTT platform, operated by Boxer TV Access, has proven successful.

Analogue switch-off commenced on 19 September 2005 in the region of Gotland and is expected to be completed by November 2007 in order to meet the 1 February 2008 deadline mandated by Parliament. The process is taking place by region and in five phases, leaving the largest cities for last. Since May 2006, the first two phases of analogue switch-off have been completed.

Switzerland

In order to have the necessary capacity to launch DTT services, partial analogue switch-off took place in March 2002 when the public broadcaster SRG SSR turned off two out of its four analogue channels throughout the country.

DTT services have since been rolled out region-by-region offering viewers the four public service broadcast programme services which were available prior to partial analogue switch-off in 2002. It is expected that country-wide coverage will be reached by 2008.

Full analogue switch-off began in the Italian-speaking region in July 2006 and will continue on region-by-region basis until completion in October 2008.

United Kingdom

Following the unsuccessful attempt to launch a pay-DTT service in 1998, the launch of Freeview in October 2002 revived the DTT platform. The platform provides 73% of the population with access to 30 free-to-air television programme services in addition to 10 services available on the pay DTT platform.

In September 2005, the Government endorsed the digital switchover timetable drawn up by the communications regulator Ofcom. Analogue switch-off will proceed regionally, beginning in 2008 with the northwest and ending with London and the southeast in 2012. The first major test for analogue switch-off will take place in 2009 when the city of Manchester switches off its analogue television.

At the behest of the government, broadcasters on the analogue terrestrial platform as well as DTT multiplex operators have launched Digital UK, a not-for-profit organisation tasked with coordinating digital switchover.

Further resources

The below websites can provide further information on digital switchover in Europe:

Pan-European
European Radiocommunications Office (see DVB-T specific pages)
www.ero.dk/

European Commission Information Society (see Digital Broadcasting under eCommunications)
europa.eu.int/information_society/index_en.htm

Austria
Das Digitale Antennenfernsehen
www.dvb-t.at

Czech Republic
Hermes
www.digitalinfo.cz/

Denmark
Digi-TV
digi-tv.dk/

Finland
Digitv
www.digitv.fi

France
Télévision Numérique pour Tous
www.tnt-gratuite.fr/

Germany
DasUberallFernsehen
www.ueberallfernsehen.de/

Italy
DGTVi
www.dgtvi.it

Spain
Television Digital Terrestre
www.televisiondigital.es/Terrestre/Ciudadanos/index.htm

Forum TDT Catalunya
www.tdtcat.net/tdtcat/AppPHP/cat/index.php

Sweden
Digital-tv övergangen
www.digitaltvovergangen.se/

Switzerland
Télévision numérique
www.televisionnumerique.ch/

United Kingdom
Digital UK
www.digitaluk.org.uk

Digital Television Project
www.digitaltelevision.gov.uk/

DigiTAG

www.digitag.org

Digital Terrestrial Television Action Group