

The final report from the Digital TV Commission describes planning and implementation of the Swedish digital TV switchover. Between 2004 and 2008, Sweden was one of the first countries in the world to switch out the technology; doing so directly or indirectly impacted just over 4 million households. We learned a lot, including that the four most important factors of success are:

- Collaboration – switchover implementation was based on a successful collaboration model and included the following main players: the Digital TV Commission, Teracom, SVT and TV4.
- Trademark – the joint “digital TV switchover” trademark helped create focus and clearly communicated a unified project.

- Information model – the campaign framework consisted of direct mail, advertising and local meetings; the campaign was gradually introduced on a local level throughout the country as the switchover reached new areas.

- Strategy for switching off – the model entailed gradual switchover throughout Sweden, which enabled information initiatives to be locally adapted and for product offerings to be developed on a continuous basis.

The Digital TV Commission hopes that it can contribute to similar projects both within and outside Sweden by sharing its experiences and knowledge in the final report.

FINAL REPORT

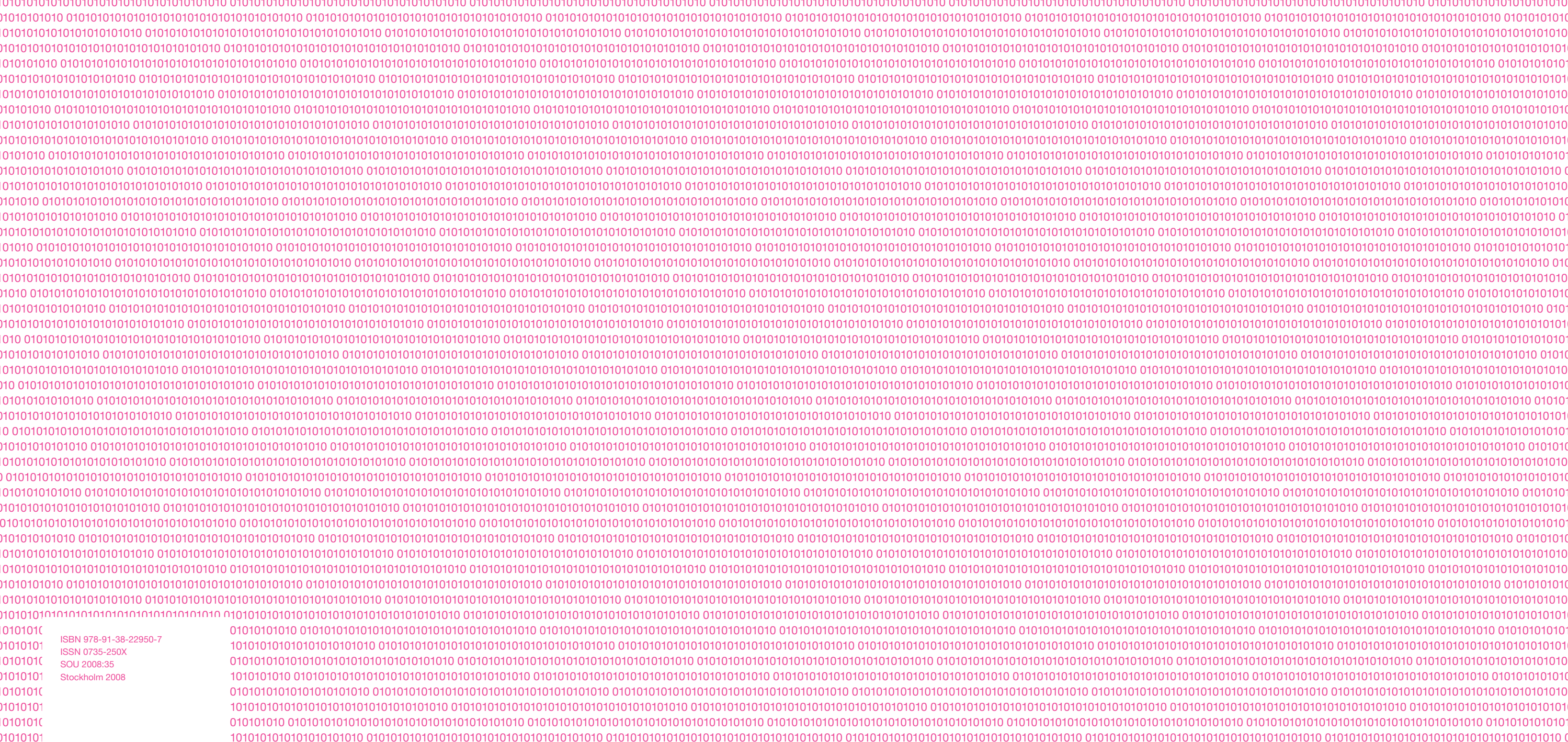
Digital**tv**övergången

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The Digital TV Commission's final report, KU 2004:04



STATENS OFFENTLIGA
UTREDNINGAR



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Bjonk!

Foreword

This report signals the conclusion of the Digital TV Commission's almost four-year appointment. We began informing Sweden's just over four million households of the major change that was in store for them at the beginning of May 2004. The switchover to digital terrestrial TV has, though, not simply been a matter of switching technology. It has also been a community project that is in many ways similar to the right-hand traffic switchover that took place 1967 in Sweden. In this report, we will look back over the past four years and share our most important experiences. There were a great many people holding their breath before the switchover on Gotland that took place on 19 September 2004. The switchovers on Gotland and in the areas that followed, however, were so smooth that the Commission was at times forced to work very hard to maintain a high level of interest in the issue. An overwhelming majority of Swedish households feel like they have received a sufficient amount of information, and a surprisingly large proportion believe that the effects of the switchover have exceeded their expectations. It is clear that the switchover that we were tasked with coordinating is the start of something much larger. Technical development has accelerated faster than ever before over the past year. The digital receiver that many households initially criticised has become a module that offers new opportunities. New televisions basically contain a dumb screen with a smart receiver. Active work with local presence has characterised the project since the start. The pink digital TV bus that toured from Kiruna in the north to Ystad in the south to inform thousands of TV viewers of the switchover symbolised the switchover in its final operative year (2007). A decisive factor of success was collaboration on the part of the digital TV switchover's project team. The working model with the Commission as the hub and project manager has functioned well. The digital TV switchover has entailed major challenges in terms of information – everything from making ourselves heard in the media buzz found in the metropolitan areas to reaching out to sparsely populated rural areas. The Swedish digital TV switchover has also attracted a great deal of international interest. The Commission has received visitors and been in contact with around ten foreign delegations interested in learning about the "Swedish model". The Swedish success has also received attention from the EU. Most of the EU countries are in the early stages of their digitalisation process. The positive experiences and teachings from the project, which was initially so severely criticised, are abundant. Welcome to the future!



Stockholm, February 2008 Lorentz Andersson

Index

The digital TV switchover in 10 minutes	6
Final report KU2004:04	49
The digital TV switchover in images	145
Appendices	225
Interviews and surveys	277
Reading tips and references	297

DN.

TORSDAG 22/7 2004

"Svart tv-ruta hos 700 000 svenskar"

Digital teknik ett dyrt sätt för att ge Ulvskog mer makt över tv, skriver partisekreterare (fp).

Om arton månader inleds nedsläckningen av det analoga tv-nätet. Svenska hushåll måste då skaffa ny tv-utrustning för i många fall tusentals kronor. Men en ny Temoundersökning visar att åtta procent – 700 000 personer – inte anser sig ha råd att köpa de digital-tv-boxar som behövs. Regeringens digitalisering av tv-marknätet är en dyr och onödig lösning, anser partisekreterare Johan Jakobsson (fp). Kulturminister Marita Ulvskogs kamp för ett digital-tv-nät handlar om att hon vill ha full kontroll över tv-medierna, skriver han. Den kanal som inte behagar makthavarna förlorar sändningstillståndet.

Dagens tv-sändningar ska ligas ned. Det har riksdag och regering beslutat. De analoga sändningarna i marknätet, som tas emot med en vanlig antenn, ska ersättas med digitala. Släckningen av det analoga nätet inleds redan 2006 och ska vara helt genomförd senast den 1 februari 2008. För att kunna fortsätta se tv måste man skaffa ny teknisk utrustning.

Hur genomtänkt är egentligen makthavarnas beslut? Vilka är skälen till detta ställningstagande? Hur påverkar det konsumenterna? Vad innebär det för medierna och för teknikutvecklingen? Och hur slår det för skattebetalarna?

Det är hög tid att dessa frågor debatteras. 2006 är bara 18 månader bort.

För att inte få svart i rutan efter att dagens tv-sändningar har lagts ned måste man antingen köpa en ny tv-apparat med inbyggd mottagare för digital tv eller så kan man köpa till en särskild digital-tv-box. De billigaste boxarna kostar i dag cirka 1000 kronor.

Det räcker emellertid oftast inte med bara en box för ett helt hushåll. Man behöver en box för varje tv-apparat och ytterligare en för video- eller dvd-spelaren.

Det blir en betydande investering för hushållen. Enligt digital-tv-utredningen som lade fram sitt betänkande 2001 (SOU 2001:90) skulle den sammanlagda kostnaden för hushållen bli hisnande 58 miljarder kronor. Beräkningen byggde på att alla hushåll skulle vilja behålla möjligheten att använda alla sina tv- och videoapparater och att digital-tv-boxarna skulle kosta 5000 kronor styck. I dag finns det som nämnts också billigare och enklare mottagare, runt 1000-lappen.

Men för många hushåll är den minsta nödvändiga investeringen för att inte få svart i rutan, 1000 kronor, ett stort åtagande. Folkpartiet har givit marknadsundersöknings- och opinionsinstitutet Temo i uppdrag att pröva konsumenternas möjlighet att skaffa en digital-tv-box.

ETT RIKSREPRESENTATIVT URVAL på 1007 personer besvarade den fråga som Temo formulerade: "Riksdagen har beslutat att tekniken för tv-sändningar ska förändras. Inom några år ska sändningarna digitaliseras. Det innebär att man för att kunna fortsätta se på tv måste skaffa en digital-tv-box. Den billigaste sortens box kostar i dag ungefär 1000 kronor. Tror du att du själv



Marita Ulvskog har valt den teknik som är överlägset dyrast för skattebetalare och tv-tittare, skriver partisekreterare Johan Jakobsson. Han menar att orsaken är regeringens strävan att ha makt över tv. På 80-talet ville s förbjuda parabolantennor. FOTO: SVEN-ERIK SJÖBERG

kommer att kunna skaffa dig en digital-tv-box eller tror du inte det?"

Resultatet av Temoundersökningen, som gjordes den 21-23 juni, visar att var sjätte svensk redan har skaffat digital tv-mottagning via satellit, kabel eller marknätet. Det framgår också att många, sju av tio, menar att de kommer kunna skaffa en ny mottagare.

Men var tolfte svensk menar att de inte kommer att kunna skaffa en digital-tv-box. Åtta procent – det motsvarar 700 000 personer i Sverige – ställs utanför. De får svart i rutan när regeringens nedsläckning av da-

gens tv-sändningar har verkställt.

Temos undersökning ger också information om vilka grupper det är som drabbas. • Var åttonde person över 60 år gör bedömningen att de inte kommer att kunna skaffa en digital-tv-box. Det motsvarar en kvarts miljon svenskar. • Nästan var tionde ensamstående förälder (9 procent) räknar med att inte kunna fortsätta ha tillgång till tv. • Var fjärde låginkomsttagare (24 procent) svarar "Nej, jag kommer inte att kunna skaffa en digital-tv-box". • Enklart större andel av kvinnor än män me-

nar att de kommer att ställas utanför (10 respektive 6 procent).

Regeringens digitalisering av tv-marknätet blir alltså dyr för oss konsumenter. Den är redan dyr för oss som skattebetalare.

Hittills har statliga bolaget Teracon investerat cirka två miljarder kronor i det digitala marknätet. Därtill har 700 miljoner satsats i det statligt majoritetsägda Boxer som säljer digital-tv-abonnemang i massiva reklamkampanjer. Hittills har detta varit en rejäl förlustaffär. Teracon har drivits till konkursens brant och räddats med extraordinära riksdagsbeslut om särskilda lån.

Fram till 2013 ska cirka 4,5 miljarder skattekronor pumpas in i Teracon för tv-distributionen. Det krävs för att klara den utbyggnad av digital-tv-nätet som riksdag och regering har beställt. Pengarna hämtas från skatten på tv-mottagare, den så kallade tv-licensen.

TV-SKATTEN HAR HÖJTS i omgångar. Trots det tvingas SVT ägna sig åt nedskärningar. Fokuseringen på distributionsteknik som public service-företaget är lågt är dyr, skadar företaget och ger ett sämre programinnehåll.

Vi har sett många tekniskifften de senaste åren. Vinylskivor ersattes av cd-skivor. Nmt-mobiltelefoner ersattes med gsm-telefoner. Bägge dessa exempel visar hur en ny teknik kan bli en succé.

Men det har också förekommit introduktioner av ny teknik som har misslyckats. Bankerna ville att vi skulle ersätta kontanter med kontantkort, men det ville inte vi konsumenter. Projektet floppade och lades ner. IT-entusiaster trodde att vi skulle köpa modekläder på nätet. Företaget Boo.com floppade och gick i konkurs.

Digitaliseringen av marknätets tv-sändningar skulle kunna vara en möjlig teknikutveckling bland andra. Men när det gäller marknät digital tv tillämpas ett helt annat tillvägagångssätt. Exemplet med alltifrån musikskivor till kontantkort prövades tekniken i ett samspel mellan konsumenter och företag.

När det gäller digital tv har staten beslutat att tekniskifften ska ske. Punkt slut. Konsumenternas åsikter efterfrågas inte.

Vi lever i en fantastisk tid med enorm teknisk utveckling. Då är det farligt att låta politikerna vilja den exakta lösningen och låsa fast oss i en viss teknik. Det som verkar

modernt i dag kan vara helt överspelat i morgon.

Kritiker till det statliga digital-tv-projektet har påpekat att framtidens tv-distribution snarare bygger på en kombination av bredband och satellit. Allt fler hushåll skaffar bredbandsuppkoppling och får därigenom tillgång till ett enormt utbud av alla medieformer, dessutom med interaktivitet.

Satellitsändningar täcker redan hela Sverige. Konkurrenskraften i satellittekniken tydliggörs av att Sveriges Televisionskanaler distribueras gratis av satellitoperatörerna samtidigt som samma public service-företag tvingas lägga en halv miljard kronor på distributionen i marknätet varje år.

YTTERLIGARE ETT PROBLEM med regeringens val av teknik för tv-sändningar är att frekvensutrymme som skulle kunna användas för mobila internetjänster spärmas. Post- och telestyrelsen har kritiserat regeringen för detta, men utan att få gehör.

Varför vill en riksdagsmajoritet med socialdemokratin i spetsen driva igenom en viss teknisk lösning för framtidens tv-distribution? Kulturminister Marita Ulvskogs argumentation går ut på att "det vid skiftet från analog till digital sändningsteknik bör eftersträvas att så många hushåll som möjligt kan använda den mottagningsteknik som är billigast och minst komplicerad för konsumenterna".

• Kulturministern bortser då helt från möjligheten att konsumenter och företag i ett fritt samspel mycket väl kan komma fram till att dagens analoga sändningar ska behållas som en av fler distributionstekniker under överskådlig tid på många håll.

• Marita Ulvskog hävdar att marknätet är det billigaste sättet att nå hela Sverige med digital-tv. Det är så fel det kan bli. Marknätet är den överlägset dyraste tekniken vid en jämförelse med satellit.

• Tanken att marknät digital tv är mindre komplicerat för konsumenten är hemmasnickrad på kulturdepartementet. För att kunna ta emot digitala satellitsändningar behövs en digital-tv-box och en parabol. För att kunna ta emot det digitala marknätet krävs en digital-tv-box och för många en särskild ny tv-antenn, det har SVT och Teracon konstaterat i ett gemensamt dokument. Varför skulle det ena vara enklare än det andra?

När de argument som framförs av kulturministern är så svaga bör man fundera på om det finns några andra motiv som hon inte lika gärna vill tala om.

Marknät tv skiljer sig framför allt på ett sätt från alla andra distributionstekniker för television. Marknätet kontrolleras av politikerna. För att få sända krävs tillstånd från regeringen. Företaget som sköter distributionen, Teracon AB, är ett statligt monopoli.

För tv-kanaler som sänder via webben, kabel eller satellit råder etableringsfrihet. Där finns det många olika konkurrerande företag som sköter distributionen.

De kanaler som sänder i statens marknät gör det alltså på regeringens och kulturministerns nåder. En kanal som inte behagar makthavarna kan förlora sitt tillstånd. Regeringen kan föreskriva vilket innehåll tv-kanalerna i marknätet ska ha, i satellitsändningar är det varken lagligt eller praktiskt genomförbart.

Inom socialdemokratin fanns på 80-talet en stark opinion för att förbjuda parabolantennor. Förslaget slyfades till att behålla en statlig kontroll av tv-mediet. Kulturminister Ulvskogs kamp för statens digital-tv-nät är en utlöpare av samma ideologi.

I våras tillsatte regeringen en kommission under socialdemokraten Anders Sundström för att leda arbetet med statens digitalisering av tv-distributionen. Kommissionens direktiv är snäva – det handlar om att verkställa den digitalisering som riksdag och regering har beslutat. Men om det finns civilkurage i kommissionens ledamöter bör de tänka i vidare banor.

OM DET ÄR SÅ, som Temo visar, att många svaga konsumenter har svårt att hänga med i en digitalisering – varför ska staten då tvinga fram den? Om det är så, som alla i branschen kan intyga, att det är mycket billigare att använda en kombination av olika tekniker än att tvinga på alla just marknät digital tv – varför kan staten då inte vara teknikneutral och låta konsumenter och företag välja själva?

Kulturministern ska dock inte få ducka bakom kommissionens arbete. Marita Ulvskog måste själv ge besked. Är det verkligen rimligt att 700 000 svenskar ska mista sin chans att se på tv till följd av regeringens politik? Är en starkt politisk kontroll av tv-mediet värt alla kostnaderna för hushållen och staten?

JOHAN JAKOBSSON

Thursday 22 July 2004, debate in the DN newspaper

As a non-political, newly appointed authority, the Digital TV Commission received help early on in getting its issues on the agenda. Attention is a positive force, and an increased level of public awareness was one of our first important objectives.

The last analogue transmitters were switched off on 15 October 2007 in Skåne and Blekinge...

odt tv

...and when the digital transmitters were switched on at the same transmitter sites a few hours later, it was clear that Sweden – as one of the first countries in the world to do so – had switched over to digital terrestrial broadcasting exclusively. This was the end of the Swedish analogue TV epoch. Was the technical switchover necessary? The answer to this question is probably a resounding “Yes” considering the riot of technical development surrounding us. Sooner or later, analogue transmission technology would become distressingly outdated. Does it have to take place now, under these conditions? Some questions are not always as easy to answer. We can, though, rest assured that the Swedish decision and switchover model will be scrutinised and discussed in the future as well. This is particularly true of the countries that will be faced with a similar technical switchover in the next decade. Speculations of this nature, though, have not been an issue for the Digital TV Commission. Our task has been to plan and help execute what the Swedish Riksdag resolved through democratic procedure. The journey has been an overwhelming one for the Digital TV Commission; landscape has quickly fluctuated and changed. After the fact, now that we have finally reached our objective, we can say that the journey has gone unexpectedly well. Why have there been so few problems, and why has it been possible to follow our plans without the necessity of any major modifications? There is no clear-cut answer, but part of the answer is perhaps that Swedes are unusually adaptable. This trait has also been apparent during other all-encompassing changes in the Swedish society – such as the right-hand road traffic switchover. Could it be that social and cultural resistance is lower in

Sweden than in the rest of Europe for situations such as these?

Four factors of success:

- Collaboration among the Digital TV Commission, Teracom, SVT and TV4. None of us could have coped with the assignment on our own.
- The “digital TV switchover” as a concept; the trademark under which all of the stakeholders were collected.
- Information campaign: created with a national perspective, but locally adapted to each phase.
- Switchover in several phases. A gradual switchover throughout Sweden offered three substantial advantages:
 - Information spilled over into the following areas in advance
 - Teracom had time to assure the quality of the technical conversion
 - A sense of clarity and predictability was communicated to the market.

We have learned a great deal as a result of planning and providing information about the digital TV switchover for the past almost four years. Thus, as an introduction of sorts to the actual report, we would like to convey our most important conclusions.

Problems will always arise, so “just do it”.

Major changes will always encounter challenges and obstacles along the way. It is impossible to predict future difficulties or prepare solutions in advance. Nothing is improved by taking a “wait and see” stance – rather, just the opposite is true. We faced two main challenges. The first challenge involved coping with the technical switchover as such. The second challenge involved convincing the general public to purchase digital receivers despite their initial resistance.

The world will change over the course of the project

It is easy to feel dejected when faced with the negative attitudes that a project such as this inspires in the beginning. It is important to remember that technical development is moving ahead and that the market changes on a month-to-month basis. Consumer attitudes change as equipment improves, the number of services increases and prices falter. Objective information can accelerate the process by helping TV viewers more easily discover the advantages.

A small, well-organised team with a clear mandate achieves more

The size of the operative organisation should be limited. A small working group can achieve more provided it has a clear mandate. A small group can also coordinate various parties and interests in a smooth and down-to-earth manner.

Work for citizens

From our point of view, it was obvious that our basic strategy should focus on the need of the citizen, and that those players who were working to force the project in a different direction would not necessarily come through. It was important to heed the viewpoints of other players while maintaining focus on the individuals who were actually affected – TV viewers.

All news is local news

In terms of information dissemination, we decided at an early stage to focus on the local areas included in each switch-off phase. Interest among citizens was kept alive, and the local media’s role involved monitoring and critically reviewing the process.

Never underestimate the power of habit

Over the four-year campaign period, we observed that TV viewers behave in much the same way as bank customers do when presented with new offerings. They shop around for a period of time, become interested in new services and new players – but in the end, they choose to keep the alternative they had from the start.

Help the market get off the ground

In order for a new range of TV products to emerge, there must be a demand for them. This type of demand can only emerge when both consumers and suppliers feel certainty about a decision. Clear decisions and information from all those involved – in particular from politicians – signal the market.

The digital TV switchover in brief

1999 Sweden begins broadcasting digitally

Political discussions on digital terrestrial broadcasting hail back to the beginning of the 1990s. The first commission for digital TV was appointed in 1993, so the issue had already been on the political agenda for several years when the Riksdag decided Sweden would entirely switch over to digital terrestrial broadcasts in 2003. The first digital broadcasting in Sweden began in April 1999.

2003 Decision to switch off analogue transmitters

In May 2003, the Riksdag resolved that digital TV broadcasts would be expanded and that analogue TV broadcasts would cease. The analogue transmitters were to be shut off in phases, and be completely shut off by 1 February 2008. A subsequent bill proposed that digital terrestrial broadcasts from SVT and Utbildningsradion (Swedish Public Service) should have the same range as analogue broadcasts and thus reach 99.8% of the population.

2004 Digital TV Commission formed

The Government decided to appoint a commission in March 2004. The commission was to prepare for the switchover from analogue to digital terrestrial broadcasts in collaboration with the impacted authorities and companies.

The commission had two primary assignments:

- present a plan for when analogue broadcasts should cease in various areas
- inform consumers around the country of the switchover.

2004–2005 The Commission plans the switchover

The Digital TV Commission's first meeting was held in May 2004. In its most active period, it consisted of the Commission itself, which met approximately every other month to discuss working strategy, and a secretariat consisting of 5 people. Autumn 2004 was spent analysing and planning, while spring 2005 was more focused on collaborating and networking with other stakeholders as well as on intensely disseminating information to the general public.

2005 Phase 1 completed without mishap

The first phase comprised Gotland, Motala and Gävle – the equivalent of 155,000 households in 12 municipalities. The phase was initiated on 19 September 2005, and was concluded in Motala on 21 November the same year.

2006–2007 Phase 2 through 5 carried out according to plan

The Commission's efforts continued along the same lines, and the very last analogue broadcasts were switched off 757 days after the first switchover on Gotland. Experience helped improve work during the course of the project. The pink digital TV bus used during phase 5 grew to symbolise the entire switchover. The final push of the button on 15 October was immediately followed by the discussions of who should be allowed to use the freed-up frequency space – the mobile or TV industry.

The Digital TV Commission

Planning:

Primarily in collaboration with Teracom, our assignment involved presenting a plan for how the switchover to exclusively digital broadcasting over Sweden's terrestrial network should be organised. In addition to satisfying the requirement for the switchover to be adapted to consumers, the assignment should also be completed at the latest by the final date for the analogue switch off as determined by the Riksdag – 1 February 2008. The terrestrial network constitutes one of four currently possible ways to receive TV. The other ways include cable, satellite and broadband.

16

Coordination:

The coordinating assignment included planning and implementation of the switchover. The Commission's role was central in terms of optimising resources and ensuring that the switchover was adapted to consumers to the greatest extent possible. The inner circle consisted of Teracom, SVT and TV4, but other stakeholders in the TV industry and the municipalities also needed information and know-how to ensure the success of the assignment as a whole.

Information:

Our single most important assignment has concerned information. The process of digitalising the terrestrial network impacts all Swedish households in one way or another. Even if a large proportion does not use the terrestrial network to watch television, many households have a summer cottage or a

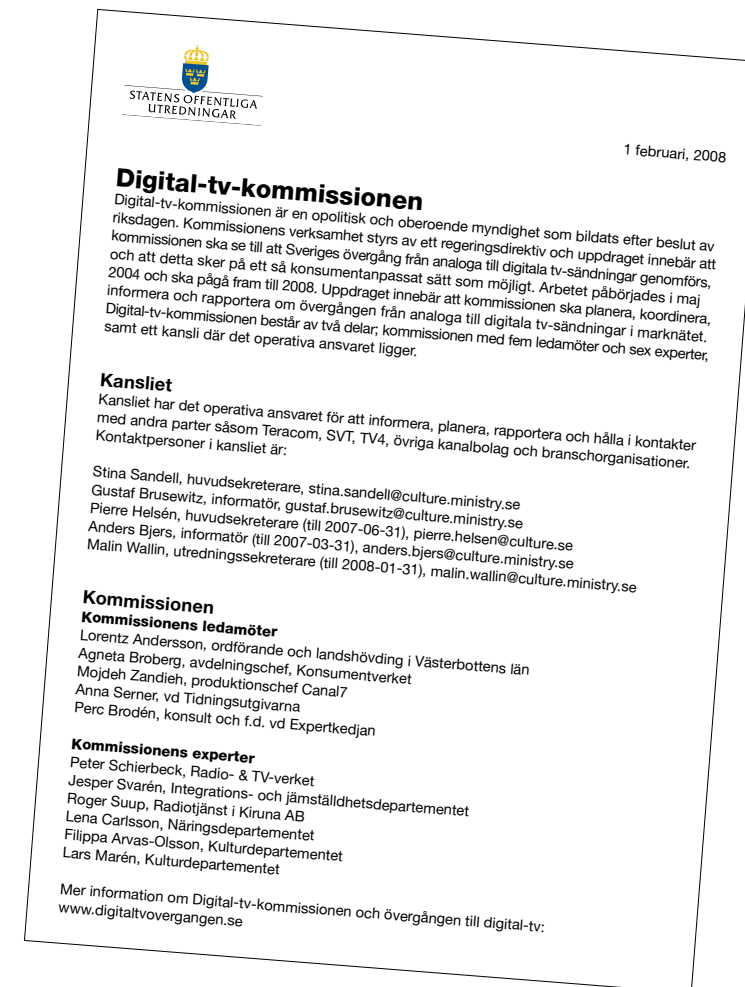
second television set that uses a regular aerial. All of Sweden's just over 4 million households needed information in order to determine if they were impacted. The Commission had the ambition to offer basic information and facts and to offer TV viewers a sound overview of the digital TV switchover.

Reporting:

The task of reporting is included in the public directive for official reports. We are to submit a report to the Government by the end of February every year. This report is the fourth and final report we will submit. We have taken an overall view of the entire period of activity.

About the Commission and its secretariat:

The Digital TV Commission functions much like a board of directors. We met once a month during the first year. The need to meet decreased over time, and we met only on three occasions in 2007. Commission members and experts function as representatives of their assignment. The secretariat has been responsible for the operative and everyday work related to the switchover.



17

The Swedish Digital TV Commission

The Digital TV Commission has been an independent authority appointed by government pursuant to the switchover decision of the Riksdag. The Commission has been assigned to ensure that Sweden's switchover from analogue to digital terrestrial TV broadcasts is carried out and that this, from a consumer viewpoint, is fulfilled as smoothly as possible. The

Commission started its activities in May 2004 and has continued working until the end of March 2008. The Digital TV Commission consists of two parts - the Commission with five board members and six experts, and an administrative office of five employees with operative responsibilities.

TV history 1926–2008

1926

John Baird, a Scottish inventor, demonstrates to the Royal Institution in London how moving images can be transferred by using primitive TV technology.

1936

BBC begins broadcasting on a regular basis.

1954

The first attempts to use terrestrial TV in Sweden are made. Broadcasts come from the TV board's temporary transmitters placed at the Royal Institute of Technology in Stockholm.

1958

Viewing breakthrough in conjunction with the Football World Cup in Sweden. The number of TV licences increased from 75,000 to 250,000 that year.

1956

Sveriges Television begins officially broadcasting on 4 September.

1969

Premier for TV2 on 5 December.

1970

Sweden receives regular colour TV broadcasts.

2007

The last analogue terrestrial transmitters are switched off in Skåne and Blekinge on 15 October.

1989

The Astra TV satellite begins operating, which is a breakthrough for satellite TV in Sweden.

1990

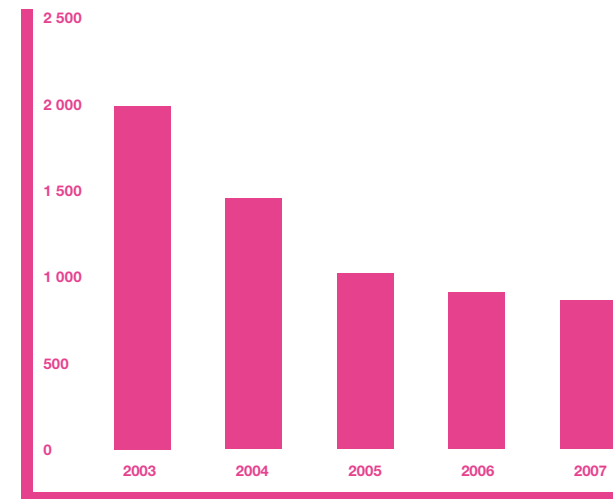
TV4 begins broadcasting.

1999

Digital broadcasting over the terrestrial network begins.

1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010

Price development between 2003 and 2007 for digital receivers
Consumer price incl. VAT, SEK



Prices fall as digital receivers become a staple commodity

As is the case with most electronics products, the price of digital receivers began to decrease substantially as demand grew. Many people were concerned that households on Gotland (phase 1) would be forced to pay sky-high prices for set-top boxes compared to households in Blekinge or Skåne (phase 5). The fact was, though, that the greatest price decrease came before the actual digital TV switchover got underway.

Source: Branschkansliets Marknadsinformation AB. February 2007

1986

Cable TV allowed in Sweden.

1987

TV3 begins broadcasting commercial TV in Sweden.

2006

Expressen first in Sweden to offer pod TV.

2006

Broadcasts from the FIFA World Cup in Germany are produced for HDTV.

2006

Teracom initiates trial broadcasts using mobile TV.

1980

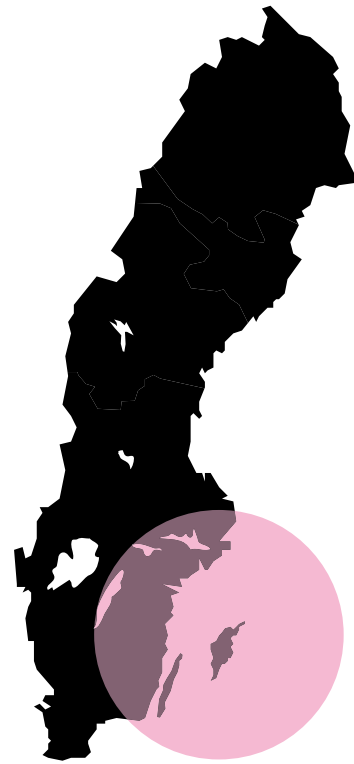
Permanent teletext broadcasts.

2008

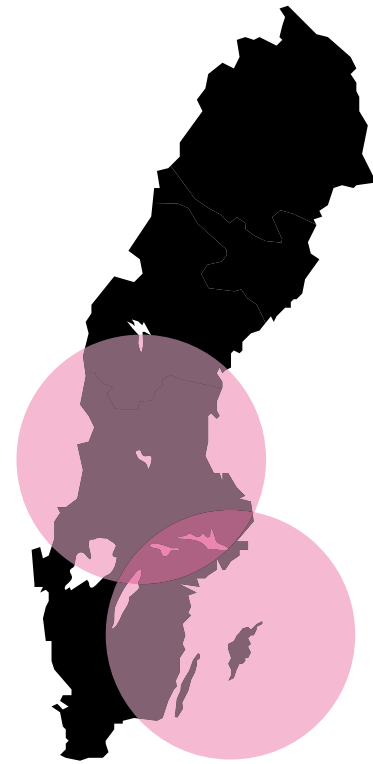
Distribution of the freed-up frequencies from the terrestrial network.

Technological switchover in five steps

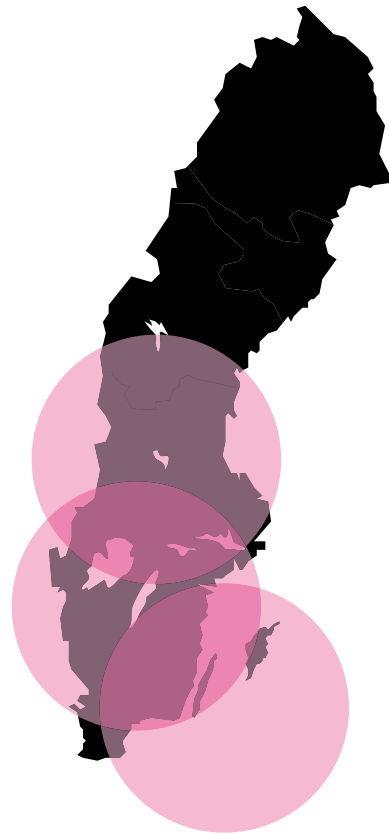
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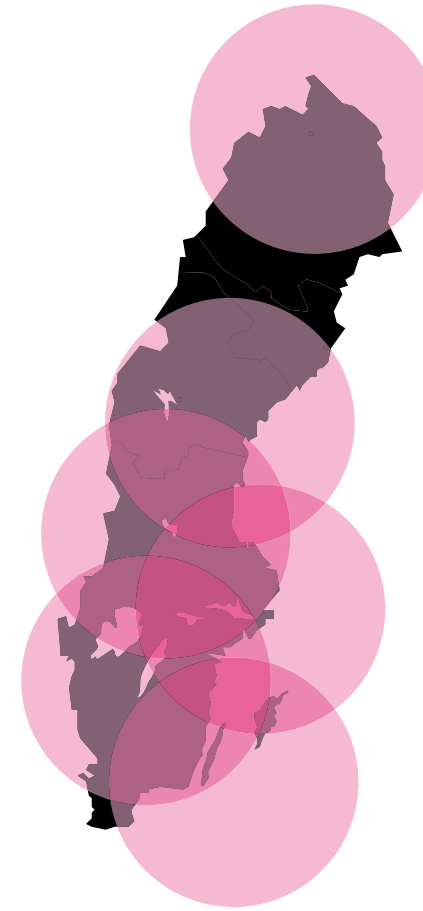
Phase 1
Main transmitter sites
19 Sept 2005: Visby
10 Oct 2005: Gävle
21 Nov 2005: Motala



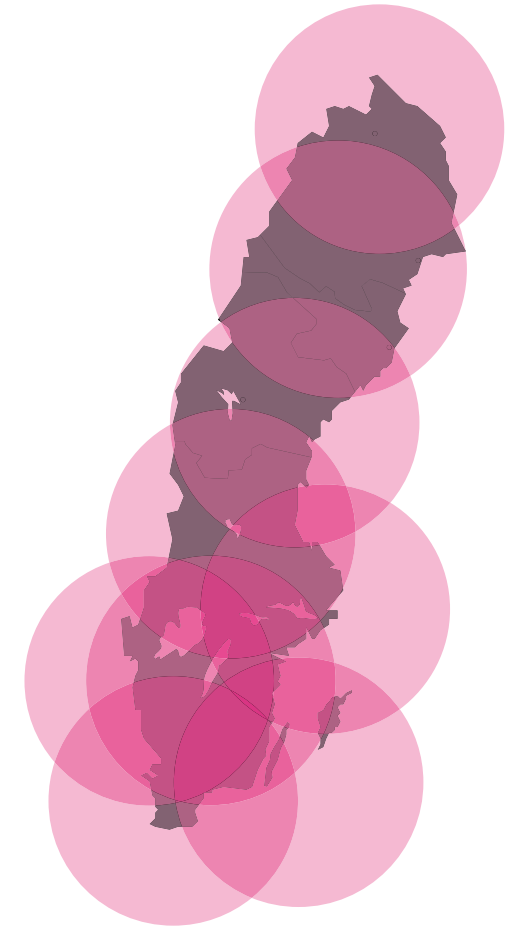
Phase 2
Main transmitter sites
27 Feb 2006: Kisa, Norrköping
3 April 2006: Uppsala, Västerås,
Örebro, Östhammar
2 May 2006: Bollnäs, Borlänge,
Hudiksvall, Mora



Phase 3
Main transmitter sites
6 Nov 2006: Borås, Emmaboda,
Finnveden, Halmstad, Jönköping,
Nässjö, Skövde, Varberg, Vislanda,
Västervik



Phase 4
Main transmitter sites
12 March 2007: Stockholm
16 April 2007: Sollefteå, Sundsvall, Sveg, Tåsjö,
Ånge, Örnsköldsvik, Östersund
14 May 2007: Arvidsjaur, Gällivare, Kalix,
Kiruna, Pajala, Älvsbyn, Övertorneå



Phase 5
Main transmitter sites
3 Sept 2007: Lycksele, Skellefteå, Storuman, Vännäs
3 Sept 2007: Filipstad, Karlstad, Sunne
24 Sept 2007: Bäckeфорs, Göteborg, Trollhättan,
Uddevalla
15 Oct 2007: Helsingborg, Hörby, Karlshamn,
Karlskrona, Malmö

21

Collaboration with several stakeholders

Collaboration partners

Collaboration partners: Teracom, SVT, TV4. Teracom, which is responsible for the terrestrial network, played a central role in technical implementation. SVT and TV4 are responsible for the Public Service broadcasts in Sweden, and were obvious collaboration partners.



Politics

The Digital TV Commission is a non-political authority, but we are nevertheless steered by political decisions. We must maintain our integrity and neutrality, no matter public opinion.

Operators

Operators: Boxer, Canal Digital, Com Hem, Viasat. Operators are important in terms of TV-viewer buying decisions. How much TV does the viewer want and which channels are of interest?



The Media

We were aware that the media would be watching and scrutinising us. Our strategy included openness and collaboration – any and all publicity boosted our information dissemination efforts.

Digital TV Commission

Electronics industry

Manufacturers, retailers and aerial installation engineers

Both a sense of expectation and irritation were experienced on the part of the electronics industry. On the one hand, a sound increase in sales was expected; on the other hand, the switchover was expected to require a great deal of extra work.



Municipalities

Municipalities are close to TV viewers and are aware of local prerequisites. Municipalities also served as important channels of information for the switchover.



Special interest organisations

Special interest organisations such as PRO, SPF and HSO (covering interests of elderly and disabled) serve as informants, as well as a mouthpiece for their members' special needs.



One strategy – five variations; phase by phase

Phase 1 Challenge

2005 Autumn

The digital TV switchover is initiated in Sweden. Analogue broadcasts are to cease at Sweden's 54 main transmitter sites. Follingbo on Gotland was the first to switch over on 19 September 2005. Sweden is one of the first countries to switch over, and a great deal of attention is focused on the country. Most issues pose a challenge, but the first phase goes well. The day after the switchover on Gotland, a journalist persists in his quest for news of something going wrong. Without success.

Phase 2 Establishment

2006 Spring

A sense of calm settles. Work can be further developed and settled after the first successful phase. Elements of the project and information campaign are repeated. Points of contact with consumers are further developed through the "digital TV days" at busy shopping centres. The question of "why" begins to taper off to be more commonly replaced by "how". Representatives from the various platform operators are invited to take part in the digital TV days.

Phase 3 Waiting period

2006 Autumn

The initial sense of concern and novelty have worn by the time the first two phases have been completed. The Riksdag election in September 2006 brings about a break in the switchover, and all of the areas in phase 3 are scheduled for one single date: 6 November. The waiting period entails a new challenge – holding the interest of the general public, the media and the project team during the waiting period.

Phase 4 Metropolitan area

2007 Spring

The switchover in Stockholm breathes new life into interest for the digital TV switchover. Dealing with the first major city and the existence of a large proportion of cable TV viewers force the project team to change their perspective. Information needs, demography and the cost of advertising force the campaign to take a new approach. The "Our turn" concept is born. A 50-metre pink train traffics Stockholm's underground for a three-month period. At the same time, the digital TV days and pink digital TV bus are developed; they visit around twenty locations across the Stockholm county.

Phase 5 Routine

2007 Autumn

Last and largest. The pink digital TV bus travels from Kiruna to Ystad as the last segments of the terrestrial network are digitalised. Interest on a local level is just as great as it was at the beginning of the switchover in 2005. Questions, however, increasingly concern possibilities such as increased programme offerings and HDTV instead of problems related to digital TV. Most TV viewers are by now well aware of what the switchover means, and the project team continues working tirelessly until the end. On 15 October 2007, members of the tired group toast the end of 13 historical switchover days with what in Sweden is known as a "funeral beer".

24



25

Analogue networks are being switched off all across the globe

Finland

Completed its digital TV switchover on 31 August 2007

Denmark

Planned digital TV switchover: entire country 31 October 2009

United Kingdom

Planned digital TV switchover: in phases 2008-2012

Germany

Planned digital TV switchover: in phases 2003-2008

France

Planned digital TV switchover: in phases 2008-2011

USA: 2009

Spanien: 2010

Kina: 2015

Japan: 2011

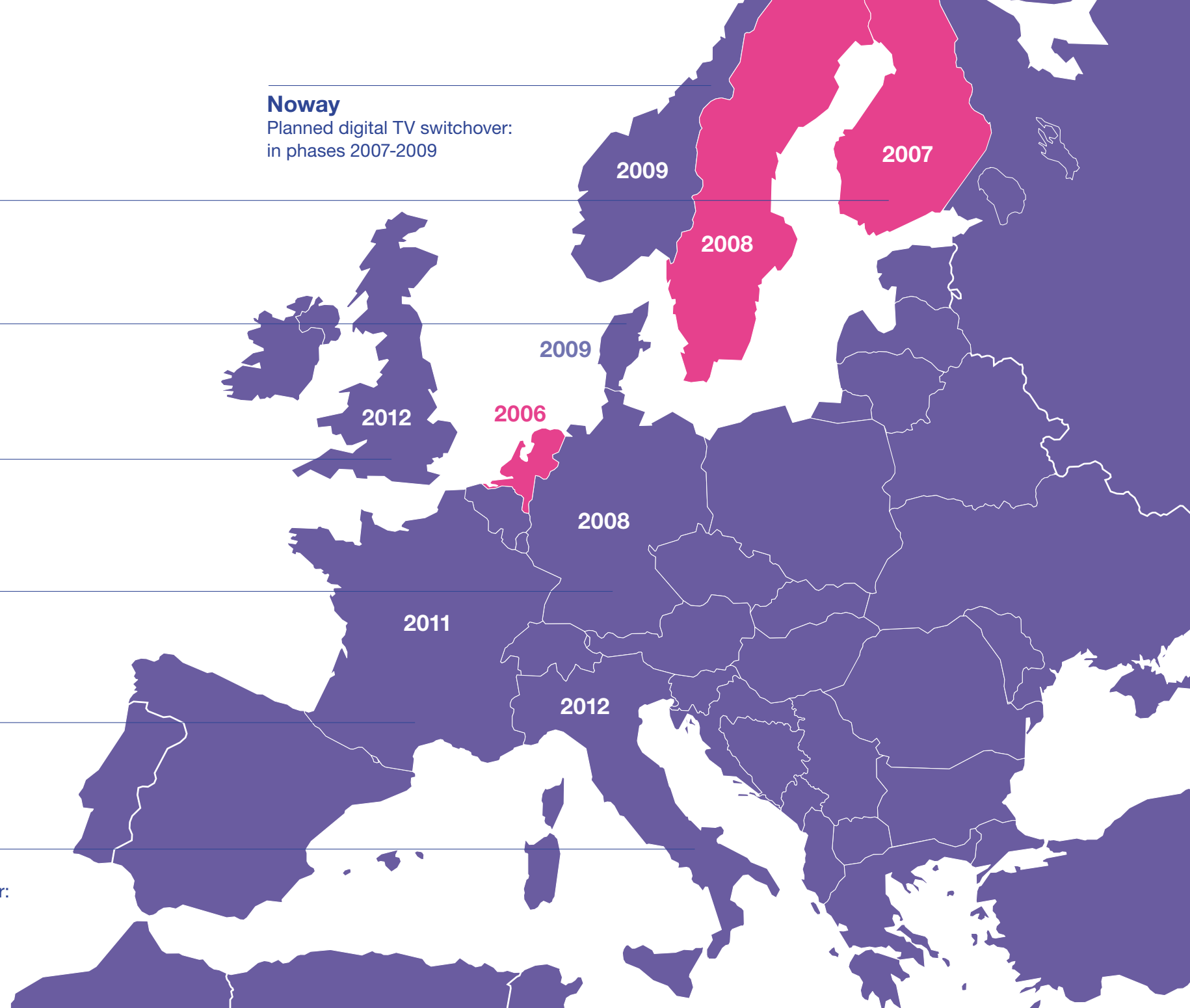
Sydkorea: 2012

Italy

Planned digital TV switchover: in phases, complete in 2012

Noway

Planned digital TV switchover: in phases 2007-2009



Interviews

The Digital TV Commission made its debut in 2004 to a stage on which most of the roles were already taken. We are aware that our appearance resulted in a certain amount of disarray. Even if dialogue has at times been sharp, we have always considered the opinions and viewpoints of other players as important for the digital TV switchover process, which is why we want to give them a chance to comment upon the course of events. Thord Eriksson, a freelance journalist, was thus assigned with interviewing various individuals who are in a position to describe the digital TV switchover from a perspective different to our own. We hope the interviews will offer the reader a more modulated overall view.



Pierre Helsén, Digital TV Commission, former Principal Secretary

30 “I usually divide the switchover into three phases – the first consisted of pure politics, then there was the messy and muddled period and finally the operative campaign. The decision to appoint the Commission emerged from the political phase. That was the only decision that had been made when I took on the assignment. It was an intense challenge, a fun assignment. When an assignment is attractive, carefully checking prerequisites may not be the most important aspect. If I had checked them more carefully, I might not have taken on the assignment...the financial prerequisites had not been thought through, which I realised at the second meeting with the Ministry of Culture.” *Pierre Helsén is talking about the discussions he had early summer 2004 with Gunilla Thorgren, State Secretary at the Ministry of Culture, about the funds that had been allocated to the Commission.* “Nobody knew anything about the issue. I had two things to do. One was to get them to understand that there was a complex of problems and that money would be required to resolve the problems. I wanted them to dictate terms to the three most involved parties, that is Teracom, SVT and TV4. I thought the assignment would be an easy one if we, the Commission, said what is needed and you, the Government, told them what they were expected to do. The response was: ‘no way, this is politics, and you need to stay out of it!’ All of my time was spent getting Teracom, SVT and TV4 involved. I didn’t exactly have an easy time of it, and I had no friends. We had to formulate

tactics and arguments to entice the companies to take part. That was the first thing I had to do. The second thing was to begin lobbying so that the Ministry would understand we had to introduce an element of ‘added value’.” Pierre Helsén sketches a character called ‘Aunt Agda, 80 years old’ – a reluctant TV viewer who fails to recognise the immediate value of switching over from analogue to digital TV viewing. “Aunt Agda’s reality was that the Government wanted to switch TV systems. For her, this meant SEK 1,000 for a set-top box. She might also have to change aerial. Her electricity bill might increase. She also had to have another piece of equipment at home, even though she hates gadgets. And what would she get in return? Barnkanalen and SVT24. The added value was in offering more freeview channels.” (The Government decided to introduce seven more freeview channels to the digital terrestrial network at the beginning of 2006.) *The Commission’s assignment included loose formulations of collaboration with various unnamed and singled out industry players.* “We really wanted to involve everyone, but neither the satellite nor the cable operators were in favour of the initiative. They were truly waiting in the wings to discredit us. We invited everyone to a meeting when we began looking into brochures, but the meeting didn’t work at all. The meeting was set up incorrectly; it turned into a circus and the participants were on a fault-finding mission. We really wanted to keep everyone informed and stay extremely neutral. We were constantly under fire for

speaking of the terrestrial network, but we had to talk about it since the switchover concerned the terrestrial network!” Questions that were being raised about the Commission’s neutrality culminated in spring 2005 when Resumé, the media industry’s journal, reported that Pierre Helsén, at the same time that he was serving as the Commission’s principal secretary, was also a member of the terrestrial network operator Boxer’s Board. “I had been a member of their Board, but had resigned without informing PRV (the Swedish Patent and Registration Office). The information was correct from a purely formal point of view, but not in actual fact. I was not serving in both positions at the same time. The minutes of the last Board meeting I attended show that I had resigned. It was my job to make sure I was no longer listed as a member of the Board, but practice in Sweden is that the company submits the paperwork.”

Did the claims of deficient neutrality damage the Commission’s efforts?

“If the Commission’s work is summarised as a civic information initiative, everything has gone fine, and the claims were not damaging. We were able to communicate our message powerfully on a very limited budget. TV4 donated airtime as did SVT – but not for our productions, for the simple reason that they did not want us to waltz in and assume an editing role.” *Pierre Helsén is referring to the information clip that the Commission produced about the switchover. SVT approved the film when it was in the conceptual stage, but then refused to air it.* “I thought that was silly. They did not like our clip because it was based on a blank screen. SVT did not believe the TV media should be used to show non-TV. We also wanted them to produce

a programme about the switchover, and tried to entice them to do a lot on their own. But then we were informed that we shouldn’t try to control their editorial content. I think SVT was wrong. They were passive in the beginning, and then gave it their all, 100 per cent. TV4, on the other hand, was with us 100% from the start. There was only dip (when TV4 was in negotiations with the Government about doing away with concession fees; refer to the interview with Jan Scherman, TV4’s CEO)”.

The Commission’s Directive was loosely formulated, in particular in terms of who you were expected to collaborate with and how. Shouldn’t it have been more specific?

31 “I believe the Directive could have been formulated so that it involved all of the players from the start. Doing so would have made life much easier. (SES Sirius, a company that owns several satellites that broadcast over Sweden, filed a complaint with the EU Commission at the beginning of 2006. The complaint accused the Digital TV Commission, via the Directive, of favouring Boxer’s monopoly on the digital terrestrial network.) If initial contact had been established between the Ministry and Sirius, and the Government had explained its ambition and said: ‘We would be very happy if you were interested in taking part, and on what terms would you like to do so’, a great deal of quarrelling could have been avoided. But we understand that it would not have been possible to stipulate investments in terms of money or TV time.”

Leif Pagrotsky, Minister for Research, Education and Culture November 2004-September 2006

“When I received this post, the decision on the digital TV switchover had already been made. The next step involved moving from decision in principle to implementation. Marita (Ulvskog, Leif Pagrotsky’s predecessor) and Göran Persson (former Prime Minister) had formed the basis for the switchover. I was poorly informed and had very little knowledge when I arrived, but this issue was one of the ones in which I involved myself the most.”

In its reports, the Commission has expressed opinions about the allocated budget from the Government. Could you comment?

“I didn’t believe they would ever have a sufficient amount of funds if they were to do the job alone. I believed that SVT and TV4 should shoulder a great deal of the responsibility since they were in a position to save a great deal of money when the process was complete. Another obvious factor was that Teracom, as a major player with a great deal at stake, should also be involved. If the Government had been too quick and generous, others would have felt like they were freed of responsibility. Instead, I chose to emphasise that our role was that of coordinator. TV4 and SVT earn millions upon millions every year as a result of distribution being digitalised, and it was natural to expect them to contribute. Of course it would have been easy for them to sit back and let the Government take care of everything – ‘we will receive our funding anyway’ – but I found

that position unreasonable. And they did contribute in the end.”

The switchover to digital terrestrial TV was initiated almost exactly one year before the Riksdag election in 2006 – how did this affect management of the issue which could become a political burden if the switchover was a failure.

“This awareness helped me take the issue very seriously. The nature of the issue was not such that success would mean that voters would announce their support of the Social Democrats as a result. If the switchover went poorly, on the other hand, the failure could be used against the Government. Deciding that the schedule for the switchover should continue past the election was resolute - the opposite of ingratiating to voters. I have colleagues in other countries who say they will make their decision after an election and that the switchover will be complete before the following election. But our resolve was strong. We were convinced that this was good for Sweden and that getting a head start was in our best interest. We also believed that the switchover would benefit the Swedish media industry and viewers. The risk was well worth taking, but we were more careful when making decisions. There was a great deal of tension before the switch off on Gotland. The Ministry and I put a great deal of time and effort into being there, preparing, talking to merchants, the industry, Teracom, TV

companies and the municipality. We wanted to understand what it was like and be able to justify why it was so. There were others who attempted to exploit the concern many felt to further their politics. The Liberal party and Lars Leijonborg promised to end digitalisation if they won the election. Leijonborg and I formally debated media issues during the election campaign, and I forced a response to one question – is this a promise we should break? The switchover had progressed well up to that point and was on the way to becoming a success, which was well known when the election campaign started. He was almost ashamed, it was embarrassing, of course.”

But did you or the Government experience concrete concern?

There was a sense of concern that the assurances from the technical players involved would prove false, that there would be technical problems, that set-top boxes would not arrive from the factory. There was also a risk that set-top boxes would be of poor quality – there was a lot to worry about. I got involved in the high prices of set-top boxes. As a former Minister for Trade, I had learned to consider prices and margins in distribution. I saw that the existing standards entailed a risk of Sweden becoming an isolated market; for example, it was not possible to purchase set-top boxes from England because they did not have the letters å, ä and ö. We were of course jittery.” *In June 2005, Leif Pagrotsky promised to give champagne to the first manufacturer and distributor that offered a digital receiver for under SEK 500. His promise attracted a great deal of attention from the media.* “My

problem was that everything was moving so slowly. Prices would have decreased by the end of the switchover, but I wanted a reduction before the first switchover on Gotland in September 2005. I got the idea for an approved, inexpensive set-top box and that I would give away champagne – really nice champagne. Emitor (manufacturer) and Elgiganten (distributor) accepted the challenge and worked secretly. They had to find volumes and the right components. They received a great deal of good advertising in exchange, which is exactly what I had tried to use as an incentive. They beat their drums for the press and put up pictures in their shops. This showed the other players that it was possible to reduce prices if there was a willingness to do so. The problem was that all of the suppliers had the same attitude – small-scale operation the first few years, with small areas. ‘We’ll make a modest entry into the first three areas, but won’t attempt any larger volumes until Stockholm’. There was a risk that the process would not get off the ground properly. This type of incentive, though, accelerated the process.”

Terrestrial network being shut down in panic

IP TV greatest threat to the Government's monopoly

Teracom is building network broadband that competes with its own terrestrial network. Everyone wants to invest in IP TV, which will soon be a true alternative to the network owned by the Government. This is the reason the Government is speeding up the analogue network switch off. "Control of television is slipping out of the Government's hands," says Manfred Aronsson, CEO of Kanal 5.

Teracom has begun protecting itself by building a broadband network for a future in which IP TV will replace the terrestrial network. The Government is speeding up switch off of the old network before IP TV becomes a real option. "Control of television is slipping out of the Government's hands. The Government is also subsidising technology," says Manfred Aronsson, CEO of Kanal 5.

The governmental distribution company currently provides broadband to 45 municipalities with 800,000 residents in Dalarna, Jämtland, Värmland and Södermanland, which constitutes competition to its terrestrial network. Seven operators supply services to broadband households. One example is Bredbandsbolaget that offers Viasat to households on Teracom's network. "Naturally, IP TV can be developed into a competing type of reception,"

says Christer Lundin, Teracom's information manager. "But cable TV has already been a competitor for several years."

Not interested in leading

After Teracom's financial crisis last year, the company has played down its technological development within new medias and is increasingly developing towards a system with electronic signals. "We are following development of technology, but have no interest in leading it," says Christer Lundin. "IP TV has quickly become a hot topic, but the technology needs to mature since IP TV is still experiencing running-in problems. IP TV is a technical solution that will definitely be offered large scale, perhaps as early as in a few years." IP TV can be viewed directly on computers, but most people prefer to convert the signal to enable programmes to be watched on television sets. Christer Lundin recognises a well-known problem: "We tolerate malfunctioning computers every once in a while, but not malfunctioning television sets. All new technology is awkward in the beginning." He does not believe that IP TV will threaten terrestrial TV, which is forcing the switch off of the analogue network in order to save Boxer. "No, Boxer can also distribute IP TV. However, it would be good if the switch off could get started as early as next autumn to enable more areas to be studied." Boxer, however, is not interested in becoming an IP TV distributor. "We have no such plans," says CEO Christer Fritzon.

Boxer, though, regards IP TV as a potential future competitor. "Of course, TV will be broadcast on

the IP network, but we believe it will be a long time before the technology really makes a breakthrough. Neither am I certain that it will out-compete existing distribution. It will more likely serve as a complement, for example IP TV for video-on-demand and pay-per-view." In collaboration with Nokia, Teracom previously pursued development of TV on 3G terminals, but has now halted experiments. "We are performing technical tests of IP-based services on the digital network through a European cooperation forum."

Aftonbladet leading

Web TV and 3G TV are entered into 'cutting edge' accounts at many media companies. Aftonbladet is the industry leader with close to 1.5 million unique visitors a month to its web TV services. "No, naturally it is not profitable yet," says Kalle Jungkvist who is the manager of aftonbladet.se. "Moving images on the network and on 3G form a constant base and must form part of our multimedia venture...Naturally, we are also looking into IP TV, but it is in its infancy. IP TV has been greatly hyped, and it will not be profitable for a long time to come." SVT is also getting ready for the next generation of platforms for moving images. A new department was adopted at SVT's most recent Board meeting; it will be responsible for the website, teletext, mobile services and the new 'Öppet arkiv'. "We are doing this to ensure that SVT's channels can exist on the platforms viewers demand," says Christina Jutterström, SVT's CEO. This is an important issue since the younger audience already has different TV-viewing habits. Among other things, Rapport and Aktuellt have difficulty attracting young viewers. "Young viewers want to decide when and where they watch televi-

sion, so it is important that SVT's news is available via mobile phones in some form in the future. It will probably not be possible to show entire news programmes." Now a new manager for the department needs to be recruited. SVT will invest SEK 25 million next year [rest of sentence illegible].

Experiment at SVT

SVT is also looking into IP TV; or rather, all of the IP TV companies are courting SVT in an attempt to have their programmes added to IP TV packages. "It is important to stay informed of the companies we collaborate with in order to be aware of what environment we are working in. We are currently only taking part in one experiment in Sollentuna. Long-term, however, SVT naturally wants to be a part of IP TV." One service of which Christine Jutterström speaks warmly is 'Öppet arkiv', which is a web service that will be offered at the beginning of next year. "We are sitting on a goldmine of old programmes, and we are digitalising them right now. The idea is to make programmes accessible via the web. This can also become a very attractive service for IP TV." TV4 offers streamed video as a pay-per-view service that enables customers to download TV episodes. Meditv's manager Thomas Brühl is following IP TV development closely. "IP TV will be distributed on parallel with other platforms. We will probably see niche channels within a few years for 'fanatic fans' of harness racing and golf, for example...A TV station can currently be built in a computer environment for less than SEK 5 million. IP TV is also inexpensive to broadcast. I can imagine that companies will find the option attractive in terms of communicating with customers and employees."

DI revving up

Gunilla Herlitz is DI's editor-in-chief. She confirms plans to venture more firmly into TV. "We will have to finance it with advertising, but will not be able to finance it fully from the start. But we want to develop web TV."

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Telephone Giants Following TV Channels on the IP TV Trail

IP TV will begin in earnest this autumn in Sweden. Canal Digital is now in the process of getting started in three cities. Viasat is allied with Bredbandsbolaget, and Bonniers' Fasttvnet has signed its first agreement in Sweden. At the same time, telephone giants Telia and Tele2 are mustering their strength. In a recent interview with Ny Teknik, Marie Ehrling said that the company is planning to venture into IP TV this year or early next year. Tele2 is also moving into the world of TV alongside Kabelvision. "We are looking into IP TV and will launch it as soon as our customers begin asking for it," says Carl-Johan Nybell, who is responsible for products and services at Tele2. Viasat has begun collaborating with Bredbandsbolaget. "We like IP and believe it is going to grow quickly. We will present our offering in the fourth quarter," says MTG's CEO Anders Nilsson. Viasat should be able to market its channels to other broadband operators as well. "Theoretically, absolutely. Collaboration with Bredbandsbolaget is the first step."

Canal Digital already broadcasts or is planning IP TV broadcasts in Helsingborg, Umeå and Kista. Bonniers' TV company Fasttvnet has signed an agreement for broadcasting in Karlstad, and the agreement can eventually include Västerås, Eskilstuna and Strängnäs.

TOBIAS RYDERGREN

Skönviksvägen in Stureby, 2005.0814 9:10 pm.





Block of flats, Majorna, Gothenburg 2007.03.01 9:45 p.m.





Same wall socket, new signal



SOL Grillen

KEBAB
SOLRULLAR

HAMBURGARE
GLASS



KEBAB
HAMBURGARE
SOLRULLAR
KORV
GLASS
LÄSK
SERV. & AVHÄMT
MÅN-TORS 11-24
FRE-LÖR 11-22
SÖNDAG 11-22
08-668 85 10



SOLRULLAR
FR.45:-







Both young and old, no one was excepted

KU 2004:04

TABLE OF CONTENTS

1. ACTIVITIES	56
1.1 Planning the switchover	56
Evaluation of the trial phase	56
Tentative beginning	56
No to a trial switchover	56
Technical prerequisites and viewpoints from SVT and TV4	57
Proposal for Phase 1 – Gotland, Gävle, Motala, Linköping	57
Government decision on phase 1 – Gotland, Gävle, Motala	57
Switchover outline for phase 1 – broadcasters’ proposal	57
Switchover plan proposal for the rest of Sweden	58
Number of phases	58
When should the phases be executed?	58
Designing each phase	58
Results – the Commission’s proposal for a switchover plan for the rest of Sweden	59
Revising the switchover outline	59
New must-carry regulations	59
Negotiations on the Commission’s proposal	59
Government decision on the switchover plan	61
Further development of the phase 1 switchover outline	62
The digital terrestrial network in 2004 – starting point for expansion	64
Riksdag’s coverage requirement for the terrestrial network	64
1.2 Assignment to monitor expansion of the terrestrial network	64
Teracom’s objective for expansion efforts	65
Converting transmitter sites	66
Expansion, phase by phase	66
Expansion of the digital terrestrial network in 2005	66
Frequency relocations	67
Expansion of the digital terrestrial network in 2006	67
SVT’s regional news broadcasts	67
Expansion in 2007 and the new sixth multiplex	68

2. THE MARKET AND DEVELOPMENT 2004–2007	69
2.1 General market presentation	70
TV viewing in Sweden	70
Cable TV and Satellite Master Antenna TV	71
Terrestrial TV - television via a regular aerial	72
Satellite platform - TV via satellite dish	74
Broadband TV	74
Viewer ratings - niche viewing increases with digitalisation	75
Freeview TV in focus	76
TV4's concession fee	76
2.2 Market development in 2005	76
Greater amount of security for consumers	77
Sales figures for 2005	77
Increased product and service offering in 2005	78
PTS opens Teracom's network to competition	78
Licensing on the digital terrestrial network	79
Dialogue with the Swedish Disability Federation (HSO)	79
Attempt to collaborate on an international level	79
2.3 Market development in 2006	79
Teracom broadcasts mobile TV on a trial basis	80
PTS report on frequency space	80
Free broadband TV opens the market	81
Developing freeview TV via satellite	81
HDTV via cable	81
SVT's HDTV strategy	81
Product offering	82
Tested set-top boxes	83
Price development in 2006	83
New services in 2006	83
New products and services	85
Broadband TV gains momentum	85
New sales record	85
Boxer's monopoly ends	85
2.4 Market development in 2007	85
Utilising freed-up frequencies	87
Basic analysis	88
External environment analysis	88

3. INFORMATION CAMPAIGN	88
3.1 Analysis, strategy and communication platform	88
Analysis of interest	89
Target groups	90
Objective	90
Resources	92
Communication strategy	93
Communication platform	94
Framework and roles	94
Joint trademark	95
3.2 Implementing each phase	96
Phase 1 – First time	96
Foot work and gaining support	96
Municipal involvement	96
Meeting with property owners	97
Gaining support from the industry	98
MTG begins coding TV3, TV8 and ZTV again	98
Confused consumers	98
Meetings with retailers	99
Supplier meetings	99
Quality-assurance test for consumers	100
Concern related to changing aerials	100
Information to consumers with special needs	101
Information to public opinion makers	101
Information to the elderly	102
Platform neutrality and EU review	103
External information dissemination	103
Launching the digital TV switchover	103
The pink brochure	104
Advertising and film	106
The Commission's website	106
Assistance telephone service	107
Local presence – information tours	108
Dialogue	109
Switchover day on Gotland	109
Switchover in Gävle	111
Switchover in Motala	111

Phase 1 summary: Smoother than expected	112
Phase 2 – Switchover outline and method established	113
Copy and paste what had worked	113
Higher level of awareness and less controversy	114
Some modifications	114
Geographic concentration	114
Early information tours	114
Heavy-going dialogue with municipalities	115
Follow-up meetings with municipalities	115
Difficult industry	116
Information to households	116
Widespread tour programme	117
Phase 2 summary: Completely according to plan	118
Phase 3 – An interlude	118
Riksdag election 2006	118
Continued focus	119
New start for municipal and industry meetings.	119
Mailings and advertising	120
Digital TV days	120
Phase 3 summary: Functioning logistics	120
Phase 4 – In a tough spot again	121
The first metropolitan phase	121
More market information	122
A new concept, “Now it’s our turn”, emerged.	122
Industry and municipal meetings	122
Mailings	123
Market activities	123
The pink bus starts rolling	123
Media penetration	124
Phase 4 summary: Digital TV on skis	125
Phase 5 – Final and biggest	126
The circle comes to a close	126
A successful conclusion	126
Industry and municipal meetings	126
Mailings and campaign	127
Tours and media contacts	127
Phase 5 summary: A successful conclusion	129

4. INTERNATIONAL VIEW	130
Digital TV Commission’s study visits	131
Germany (Berlin)	131
Finland	131
Increasing interest from the rest of the world	131
Italy and the United Kingdom	132
Other contacts	132
Questionnaire survey on carrying out the digital TV switchover in ten countries	132
Decision-making	133
Differences in prerequisites	133
Technical standards	133
Organisation	134
Implementation plans	134
Information dissemination	135
Resources	135
Subsidies	136
Harmonising measures within the EU	136
The European Commission’s communication for a quicker switchover to digital broadcasts	136
Examining support measures	137
New must-carry regulations	138
5. OTHER INFORMATION	138
5.1 Information needs related to must-carry regulations	138
Information vacuum led to various interpretations	139
Information initiatives related to the digital TV switchover	140
5.2 The switchover from the perspective of preparedness	141
5.3 The Commission’s three proposals for measures that required the Government to take a position	142

1. ACTIVITIES

1.1 Planning the switchover

The first assignment the Digital TV Commission was faced with involved planning the switchover. Some of the questions that needed to be addressed were:

- How should the switchover be scheduled?
- In which order should analogue transmitters be switched off?
- With which players should there be collaboration?
- Is some sort of trial switchover desirable, such as switching off a transmitter in a limited area on a trial basis?

ish broadcasters transmitting in the analogue terrestrial network. (see *image of stakeholders in Chapter 3*). As the contact network grew, it became increasingly apparent that collaboration would be characterised by strong wills. Opinions of how the switchover should be financed not only differed – they were decided. The Commission found itself in a delicate position – we were carrying a heavy burden but we were not in a position to force anything that others were not willing to adopt. No matter what the Government had decided.

The solution was diplomacy and sensitivity – finding balance to enable a plan that all parties could agree upon. At the same time, the solution needed to be technically feasible and decidedly focused on the need of consumers. We also needed to be ready to put the switchover plan into motion as soon as the Riksdag finally decided upon new rules for must-carry regulations for cable networks¹.

No to a trial switchover

We had already decided as early as August 2004 not to propose a trial analogue switch-off in a

limited area. Since a return to analogue broadcasts was out of the question, the “trial” designation was misleading. However, we felt that decisions related to the first phase of the switchover should be made before planning subsequent aspects. This resulted in a pilot phase that would offer valuable experiences in the face of future switchover efforts.

Technical prerequisites and viewpoints from SVT and TV4

An important initial issue was in which municipalities the first phase should take place. We met with representatives from municipalities that were interested in being part of the first phase on several occasions. When a preliminary plan for the first phase had been produced, viewpoints from the broadcasters in the analogue network, SVT, UR and TV4 were ascertained before the proposal was submitted to the Government.

Proposal for Phase 1 – Gotland, Gävle, Motala, Linköping

The Commission submitted its proposal for phase 1 to the Government on 27 September 2004. We proposed that the first phase take place in autumn 2005 in the Gotland, Gävle and Motala/Linköping service areas. These areas were chosen because the relevant municipalities had expressed a great deal of interest and because prerequisites were positive in terms of technology, geography, demography and climate.

- The island Gotland constituted a geographically delimited area with limited interference problems, lots of rural areas and a great many households that received TV via the terrestrial

network.

- Gävle constituted a more complicated area with various border problems. It also included urban areas with many cable households.
- Motala/Linköping represented a combination of urban and rural areas in an area with a long tradition of radio and TV.

We also ensured that simulcast was possible (*analogue and digital*) during the entire switchover period in the four areas.

Government decision on phase 1 – Gotland, Gävle, Motala

On 22 December 2004, the Government resolved that the first phase would include the Gotland, Gävle and Motala service areas. (*Linköping was excluded.*) The decision had the form of amendments to SVT’s, UR’s and TV4’s broadcasting licences. The first phase was scheduled to be executed 1 September – 13 December 2005. The Government left to the broadcasters to work out the specific details of the switchover.

Switchover outline for phase 1 – broadcasters’ proposal

Work on a detailed level for phase 1 commenced in January 2005. SVT, UR and TV4 presented a detailed plan for the phase to the Commission on 8 February (*the plan had been produced in collaboration with Teracom*). The basis of the broadcasters’ proposal consisted of:

- a desire to obtain know-how
- sense of fairness: ensuring no one channel was considered more important than any other
- a desire to maintain homogenous local and re-

Evaluation of the trial phase

Tentative beginning

The Commission decided to make technical prerequisites the point of departure for planning the switchover. Seasonal aspects, holiday periods and major events such as the World Cup in football was also taken into consideration. This is one reason contact with players such as the network Teracom was initiated at an early stage (*spring 2004*).

We contacted other relevant players as time progressed, most importantly, the two major Swed-

¹ See legislation on must-carry regulations, Chapter 5.

² Government decision Ministry of Culture 22 December 2004 nos. 57, 58 and 59.

gional broadcasts to the greatest extent possible.

According to the schedule, the phase 1 switchover was planned to be completed by 12 December 2005. Switchover days would be scheduled for Mondays at 9:45 a.m., which is the time morning broadcasts on each of the channels ended. When an analogue had been switched off, a text box referring the viewer to teletext and the Internet would be displayed for two weeks on the channel.

Switchover plan proposal for the rest of Sweden

We had also began (*with Teracom*) working on a plan for the subsequent phases as early as late autumn 2004. The plan was primarily based on various technical and geographical conditions. Viewpoints from SVT, UR and TV4 as well as from retailers and consumers were taken into consideration when formulating the plan. We submitted our proposal to the Government on 20 April 2005 (see *Appendix 3*). It proposed the number of phases as well as the scope for each phase.

Number of phases

Just as was the case in phase 1, we determined that it was best to avoid summer and holiday periods since it was more difficult to reach consumers with information during those periods. Cold winter periods were also assessed as unsuitable since roof aerials might need to be adjusted by households in conjunction with the switchover. Teracom's work on transmitter sites was also facilitated if cold periods were avoided. Thus, the time remaining up to 1 February 2008 could be divided into two spring and two autumn phases.

When should the phases be executed?

An important issue was if the switchover should continue with a second phase in spring 2006 or if a break was desirable to enable an evaluation of phase 1 before starting the second and biggest phase. We decided it was better to continue in spring 2006 without a break for evaluation because

- demand for digital TV receivers would remain steady from the first phase into the spring
- it would be possible to assist and advise consumers more efficiently if need is spread out over a longer period of time
- it was easier to plan and provide information if the process was ongoing
- initiatives in preparation of phase 1 could be more efficiently taken advantage of.

Taking a break in spring 2006 would also have required extra information initiatives, which would have coincided with the Riksdag election campaigns in September of the same year. Based on these arguments, we proposed that the continued switchover should be divided into four additional phases.

Designing each phase

Our aim was an even distribution of households and transmitter sites over the next four phases. It was important that Teracom had time to expand the digital terrestrial network to guarantee adequate coverage before the switchover. This also meant that the effects of clean-cut solutions (*pertained to sites where parallel broadcasting was not an option*) were minimised. It was also important to SVT and TV4 to maintain homogenous local and regional broadcasting areas to the

greatest extent possible. This was believed to be possible with a switchover plan based on expanding the three areas included in phase 1, since information would naturally flow into the next area, and retailers would be prepared. It would also be possible to maintain the level of competition among retailers.

We believed that switchover in the metropolitan areas should be delayed until we had obtained more experience in terms of switching over a large number of households at the same time. We also believed that Stockholm, Gothenburg and Malmö should be placed in separate phases for the reason mentioned above and to keep the interest of the media alive.

Results – the Commission's proposal for a switchover plan for the rest of Sweden

The digital TV switchover proposal consisted of totally five phases, of which phase 2 was to be carried out in spring 2006. The recommendation was for the spring phases to take place 1 March – 31 May and the autumn phases 1 September – 30 November. The proposal recommended that the metropolitan areas (*Stockholm, Gothenburg and Malmö*) be placed in separate phases, and that they be switched over later in the schedule.

The terms of reference for the Commission stipulated that the proposal for the continued switchover plan should be submitted after the Riksdag had determined new rules for must-carry regulations for cable networks. However, we did not believe we could wait on the decision since doing so would result in delayed information initiatives

for phase 2. Thus, we requested that the Government make a decision regarding the switchover plan before June 2005.

Revising the switchover outline

In May 2005, CANT (*Centrala Antennföreningen; industry organisation for the aerial and cable TV industry*) informed the Commission that there could be considerable delays for anyone needing installation assistance if all of the channels were switched off simultaneously on Gotland. As a result, the switchover outline for Gotland was revised in late spring; SVT, UR and TV4 agreed to broadcast analogue SVT1 an additional two weeks after 19 September 2005.

New must-carry regulations

The Riksdag decided upon new regulations for must-carry over the cable network on 26 May 2005.

Negotiations on the Commission's proposal

When we had submitted our switchover plan proposal, the matter was processed by the Government and submitted to relevant players. The following organisations expressed their opinion of the proposal: the Radio and TV Authority, the Swedish Consumer Agency, the Swedish National Post and Telecom Agency, the Swedish National Pensioners' Organisation, the Swedish Association for Senior Citizens, SVT, UR, Teracom and TV4.

They were all basically positive to the proposal, and recommended that the Government reach a quick decision. Almost all of the responses were in favour of an ongoing switchover without a break in spring 2006. Some (*such as SVT and TV4*) believed, however, that one of the metropolitan areas should be scheduled earlier in the switchover plan (*in 2006*) to propel the market. SVT, UR, TV4 and Teracom presented two other switchover plan proposals in a communication

dated 24 May. One of the proposals adhered to the Commission's proposal and the other one moved several areas to sub-phases.

Something that complicated matters for us during this period was that the commercial broadcaster TV4 was having difficult discussions with the Government about their concession fee.

Government decision on the switchover plan
The Government decided on the continued switchover plan on 22 June 2005 (*see Appendix 4*). The decision deviated slightly from the Commission's proposal. For example, phase 3 was reduced from fifteen to nine main transmitter sites, resulting in six main transmitter sites being moved to phases 2 and 5. The motive was to make it possible for all of phase 3 to be executed

at one single date after the Riksdag election in September 2006, preventing competition for attention with the election campaign.

As for phase 1 the Government decision had the form of amendments to SVT's, UR's and TV4's broadcasting licences, and included clear start and stop dates for each phase of the digital TV switchover. Each phase with the exception of

Digital TV switchover, phase by phase

Location of the large masts and affected municipalities

PHASE 1 sep–nov 2005

1. Visby, Gotland
2. Gävle, Hofors, Sandviken, Ockelbo, Älvkarleby
3. Motala, Askerund, Finspång, Karlsborg, Mjölby, Vadstena

PHASE 2 feb–maj 2006

4. Kisa, Boxholm, Kinda, Linköping, Ydre, Åtvidaberg
5. Norrköping, Flen, Katrineholm, Nyköping, Oxelösund, Söderköping, Valdemarsvik, Vingåker
6. Uppsala, Krivsta
7. Västerås, Arboga, Avesta, Enköping, Eskilstuna, Fagersta, Hallstahammar, Heby, Kungsör, Köping, Norberg, Sala, Skinnskatteberg, Surahammar
8. Örebro, Degerfors, Hallsberg, Karlskoga, Kumla, Laxå, Lindesberg, Ljusnarsberg, Nora, Leksand, Ludvika, Smedjebacken, Säter, Vansbro
9. Östhammar, Norrtälje, Tierp
10. Bollnäs, Ljusdal, Ovanåker, Söderhamn
11. Borlänge, Falun, Gagnef, Hedemora, Leksand, Ludvika, Smedjebacken, Säter, Vansbro
12. Hudiksvall, Nordanstig
13. Mora, Malung, Orsa, Rättvik, Älvdalen

PHASE 3 nov 2006

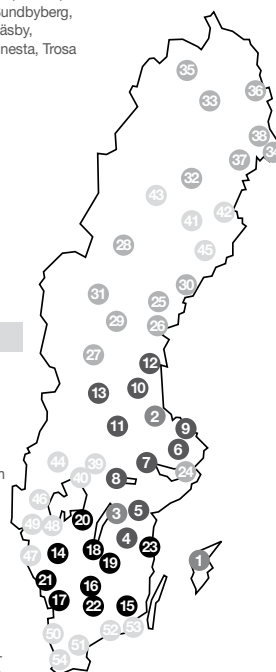
14. Borås, Herrljunga, Mark, Svenljunga, Tranemo, Ulricehamn, Värmdö, Bollebygd
15. Emmaboda, Borgholm, Högby, Kalmar, Lessebo, Münsterås, Mörybylånga, Nybro, Torsås, Uppvidinge
16. Finnveden, Gislaved, Gnosjö
17. Halmstad, Båstad, Hylte, Laholm, Markaryd
18. Jönköping, Habo
19. Nässjö, Aneby, Eksjö, Sävsjö, Tranås, Vaggeryd, Vetlanda
20. Skövde, Falköping, Gullspång, Götene, Hjo, Mariestad, Mullsjö, Skara, Tibro, Tidaholm, Töreboda, Vara, Odeshög
21. Varberg, Falkenberg

PHASE 4 mars–maj 2007

24. Stockholm, Botkyrka, Danderyd, Ekerö, Haninge, Huddinge, Håbo, Järfälla, Lidingö, Nacka, Nynäshamn, Salem, Sigtuna, Sollentuna, Solna, Stockholm, Strängnäs, Sundbyberg, Södertälje, Tyresö, Täby, Upplands-Bro, Upplands-Väsby, Vallentuna, Vaxholm, Värmdö, Österåker, Nykvarn, Gnesta, Trosa
25. Sollefteå, Kramfors
26. Sundsvall, Härnösand, Timrå
27. Sveg, Härjedalen
28. Tåsjö, Dorotea, Strömsund, Vilhelmina
29. Ånge, Bräcke
30. Örnsköldsvik
31. Östersund, Berg, Krokoms, Ragunda, Åre
32. Arvidsjaur, Arjeplog, Malå, Norsjö, Sorsele
33. Gällivare, Jokkmokk
34. Kalix, Haparanda
35. Kiruna
36. Pajala
37. Älvsbyn, Boden, Luleå, Piteå
38. Övertorneå

PHASE 5 sep–okt 2007

39. Filipstad, Hällefors, Kristinehamn och Storfors
40. Karlstad, Forshaga, Grums, Hammarö, Kil
41. Lycksele, Bjurholm, Åsele
42. Skellefteå
43. Storuman
44. Sunne, Arvika, Eda, Hagfors, Munkfors, Torsby
45. Vännäs, Nordmaling, Robertsfors, Umeå, Vindeln
46. Bäckebo, Bengtfors, Dals Ed, Lidköping, Mellerud, Säffle, Ämål, Årjäng
47. Göteborg, Ale, Alingsås, Härryda, Kungsbacka, Kungälv, Lerum, Mölndal, Partille, Stenungsund, Tjörn, Öckerö
48. Trollhättan, Essunga, Grästorp, Vänersborg
49. Uddevalla, Färgelanda, Lilla Edet, Lysekil, Munkedal, Orust, Sotenäs, Strömstad, Tanum
50. Helsingborg, Höganäs, Åstorp, Ängelholm
51. Hörby, Bjuv, Hässleholm, Höör, Klippan, Kristianstad, Perstorp, Simrishamn, Sjöbo, Skurup, Tomelilla, Ystad, Örkelljunga
52. Karlshamn, Bromölla, Olofström, Osby, Ronneby.



From analogue to digital-only terrestrial TV broadcasts

Stage	Transmission site(s)	Date	Households
1	Visby Gävle Motala	19 september 2005	155 000 (3,5%)
		10 oktober 2005	
		21 november 2005	
2	Kisa, Norrköping Västerås, Uppsala, Örebro, Östhammar Bollnäs, Borlänge, Hudiksvall, Mora	27 februari 2006	940 000 (22%)
		3 april 2006	
		2 maj 2006	
3	Borås, Emmaboda, Finnveden, Halmstad, Jönköping, Nässjö, Skövde, Varberg, Vislanda, Västervik	6 november 2006	735 000 (17%)
4	Stockholm Sollefteå, Sundsvall, Sveg, Tåsjö, Ånge, Örnsköldsvik, Östersund Arvidsjaur, Gällivare, Kalix, Kiruna, Pajala, Älvsbyn, Övertorneå	12 mars 2007	1 120 000 (26%)
		16 april 2007	
		14 maj 2007	
5	Filipstad, Karlstad, Lycksele, Skellefteå, Storuman, Sunne, Vännäs, Bäckebo, Göteborg, Trollhättan, Uddevalla, Helsingborg, Hörby, Karlshamn, Karlskrona, Malmö	3 september 2007 24 september 2007 15 oktober 2007	1 355 000 (31,5%)

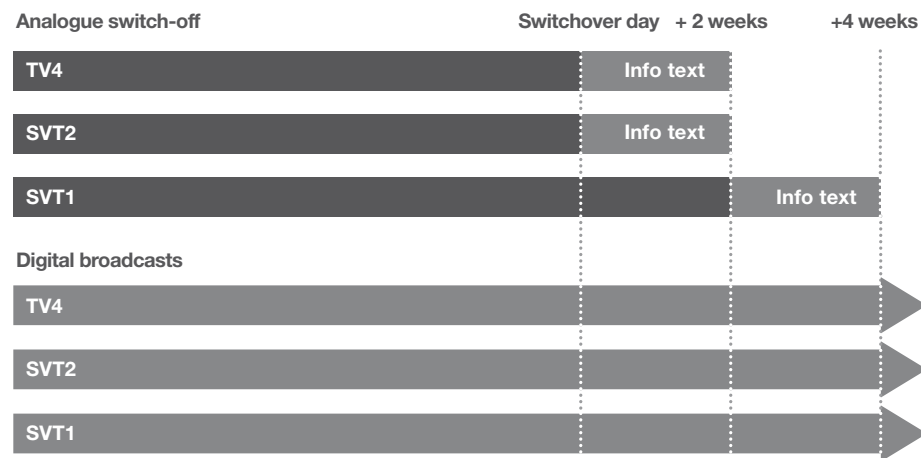
The major difference between our proposal and the Government's decision involved all of phase 3 being moved to one date to avoid competition with the Riksdag election in September 2006.

phase 3 were divided in sub-phases. Broadcasters were entitled to broadcast text messages an additional 21 days after their broadcasting rights had ceased. The decision also allowed for a certain amount of flexibility for unforeseen events.

Further development of the phase 1 switchover outline

The switchover outline that was formulated before phase 1 proved to be effective and was further developed for the subsequent phases. We contin-

Time plan for the switchover to digital-only broadcasts



After the actual switchover day, SVT1's analogue broadcasts continued for two weeks as a safety measure for households that missed the informational campaign.

ued discussing specific details for switchover days with SVT, UR and TV4 in autumn 2005. A modified switchover outline was agreed upon by the parties in October 2005. The parties agreed to call the day that analogue broadcasts ceased for SVT2 "switchover day". As a rule, the switchover would be executed on Mondays at 09:45. They agreed on the principle of two analogue channels being switched off on switchover day while one channel (SVT1 or TV4) would continue analogue broadcasting for an additional two weeks.

When a channel's analogue broadcasts had been switched off, a text box informing the viewer of the switchover would be displayed to refer him or her to teletext and the website. The text box would in principle be displayed for a fortnight, but it was agreed that this period could be reduced if needed. The parties would reach agreement regarding how the switchover should proceed practically before each phase.

At the end of November 2005 – in conjunction with concluding phase 1 – the switchover outline was again supplemented, which improved conditions for our information to the general public. The parties agreed that SVT2 and TV4 would always be switched off first and that SVT1 would broadcast in analogue an additional two weeks. The reason SVT1 was chosen was because the channel was often broadcast analogue in the VHF band, a frequency space that would not be used for the digital transmissions.

1.2 Assignment to monitor expansion of the terrestrial network

One of the Commission's assignments entailed monitoring the terrestrial network's expansion. From the start, the Riksdag stipulated that SVT's broadcasts in the digital terrestrial network must have the same level of coverage that the former analogue terrestrial network had had, that is 99,8% of all permanent households. Furthermore, it should be possible for 98% of the population to receive broadcasts from at least one additional multiplex³.

64 Teracom's capability in terms of expanding the digital terrestrial network to full coverage was an important consideration for the switchover itself and when planning. The issue involved more than just technology and logistics; communication related to how and when the broadcasting network was expanded was also significant in terms of the general public understanding digitalisation. Information in particular was important since one of the motivations for the switchover was that households would gain access to additional TV channels.

The digital terrestrial network in 2004 – starting point for expansion

Riksdag's coverage requirement for the terrestrial network

The Riksdag's decision on 26 May 2004 meant that SVT's and UR's digital terrestrial broadcasts

would cover the same proportion of households that analogue broadcasts had covered, that is 99.8% of permanent households in the country. The decision also requested that an additional multiplex offer at least 98% coverage, which was in line with the coverage requirements stipulated in TV4's analogue broadcasting licence. In order to achieve 98% coverage, all 14 main transmitter sites that were still solely analogue needed to be expanded⁴. There were also around 15 relay sites that needed to be digitalised or adjusted in order to improve reception. In order for SVT's and UR's broadcasts to reach 99.8% coverage after the digital TV switchover, an estimated 500⁵ relay sites used in the analogue network would need to be expanded with multiplex 1. It was not necessary to convert all of the relay sites since it was believed that the same degree of coverage could be achieved with slightly fewer transmitter sites in the digital network.

Broadcasts over the Swedish terrestrial network reach a larger proportion of the population than is the case in many other countries. This is due to political decisions that are primarily motivated by the fact that SVT's broadcasts should reach as much of the population as in free-to-air transmissions that are easy and simple for households to reach everywhere.

Teracom's objective for expansion efforts

Teracom set its objectives for expansion work early on and emphasised the importance of expanding the network to a sufficient extent and in a manner that enabled viewers to perceive a significant improvement to reception. The starting point was to enable households that had good analogue reception from the terrestrial network to receive good quality digital terrestrial signals as well. In its expansion work, Teracom chose to prioritise transmitter sites in the order they were affected by the switchover. The aim was for viewers to have access to parallel digital broadcasts as far as possible in advance of the switchover.

Before each phase Teracom performed an inven-

tory of the transmitters and transmitter sites, and then determined if the relevant relay sites should be converted or shut down. In some phases it was decided to invest in new transmitters and to set up new transmitter sites to achieve the best level of coverage possible at a reasonable cost. The aim was for detailed planning to be completed at least six months before each switchover date, upon which time the plan could be communicated to the Commission, SVT and TV4. Teracom's internal reorganisation and extensive work related to field strength measurements, however, resulted in the detailed plans for phase 2 being presented relatively late – just under a month before the first switchover day.

Build-out of the DTTV network in Sweden
Population coverage (permanent homes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Mux 1	-	50%	50%	70%	90%	90%	90%	98 +%	98 +%	99,8%
Mux 2	-	50%	50%	70%	90%	90%	90%	98%	98 +%	98 +%
Mux 3	-	50%	50%	70%	90%	90%	90%	98%	98%	98 +%
Mux 4	-	-	50%	70%	90%	90%	90%	98%	98%	98 +%
Mux 5	-	-	-	-	50%	50%	50%	50%	70%	70%
Mux 6	-	-	-	-	-	-	-	-	-	27%

Several of the original 600 small transmitters (relay sites) are no longer needed in the digital terrestrial network and have therefore been phased out.

3. Prop. 2003/04:118, bet. 2003/04:KU24, rskr. 2003/04:231.

4. Arvidsjaur, Bäckeå, Filipstad, Finnveden, Gällivare, Lycksele, Pajala, Sollefteå, Storuman, Sunne, Sveg, Tåsjö, Ånge and Överkalix.

5. Out of a total of 632 analogue relay stations.

6. See SPF's final report; www.psyceff.se.

During the whole switchover, Teracom staff remained in the relevant areas a few days after the completed switchovers to perform measurements and to verify adequate coverage. Teracom has also subsequently returned to individual areas with poor reception conditions and performed supplementary measurements. This has led to new relay transmitter sites (*on northern Gotland, Fårö and Löttorp on Öland, for example*). Ongoing updates and adaptations to the terrestrial network have resulted in improved coverage.

Converting transmitter sites

Relay sites have generally been converted at the same time as relevant main transmitter sites. Some of the relay sites (*primarily those that cover the last 1.8% for multiplex 1*) have not been converted until the actual switchover day due to cost considerations (*clean cut*). This means that 1.8% of households were not able to receive terrestrial digital TV prior to the switchover.

Expansion, phase by phase

Expansion of the digital terrestrial network in 2005

The transmitter sites included in phase 1 were prioritised in order to give as many households as possible the opportunity of receiving digital terrestrial TV prior to the switchover.

Phase 1 comprised one main transmitter site per sub-phase and nine relay sites. Of the three included areas, Gävle was the most technically complicated. Motala was the least technically complicated mainly because frequency changes were not necessary. Two new transmitter sites were set up on Gotland – Bunge and Havdhem – and the two relay sites in Hedesunda and Gävle/Bomhus were shut down. A new digital relay site was set up in Avesta/Krylbo, even though the area would not be affected by the digital TV switchover until phase 2.

Clean-cut solutions were necessary on Gotland and in Gävle for one⁷ respectively four⁸ relay sites. Two transmitter sites in the areas relocated frequency in order to improve reception for consumers.

Teracom had achieved about 98% coverage on the digital terrestrial network for multiplexes 1–4 as early as 2005. By the end of 2005, the digital

terrestrial network comprised 53 of the 54 main transmitter sites and approximately 30 relay sites. Multiplex 5, however, still had a coverage degree of around 50%, which corresponded to twelve main transmitter sites and six relay sites⁹.

Frequency relocations

Frequency changes most often involved SVT's digital broadcasts being moved to low frequency channels that had previously been used for analogue broadcasting, which is why relocations were generally performed in conjunction with the digital TV switchover. The frequency change also sometimes entailed other channels being moved to frequencies that were less exposed to interference.

Frequency relocations have resulted in clear improvements to reception conditions after the digital TV switchover. In particular for households with old aerials and for areas in which signals have difficulty reaching households due to hilly terrain or interference from neighbouring countries, frequency relocation has improved conditions. Our follow-up surveys show that very few households in these areas – far fewer than feared – have had to switch out their aerials. At the same time, however, the relocations have been experienced as a complicating factor by households since reinstallation or channel searches have been necessary.

Expansion of the digital terrestrial network in 2006

Expansion of the digital terrestrial network in 2006 resulted in regional coverage of 99.8% for SVT's and UR's broadcasts in the areas included

in the switchover. At the end of 2006, all 54 main transmitter sites and 170 of the relay sites were transmitting digital signals. Coverage for multiplex 2 was also slightly improved on a regional level since several relay sites were expanded in conjunction with the switchover. The expansions pertained to transmitter sites that had previously only accommodated SVT's broadcasts. After agreements between Teracom and TV4, they were expanded to encompass multiplex 2 and thus TV4's broadcasts. By the end of 2006/beginning of 2007, multiplex 2 was found at all of the main transmitter sites and 64 relay sites.

Multiplex 5 had also been expanded to 70% coverage by the last part of 2006. Teracom primarily ensured that uncoded freeview channels that could only be broadcast to certain regional areas could be received within the entire relevant area. Thus, multiplex 5 was at 21 main transmitter sites and 13 relay sites by the end of 2006/beginning of 2007¹⁰.

SVT's regional news broadcasts

According to an agreement between SVT and Teracom¹¹, coverage for SVT's regional digital TV broadcasts would be expanded to enable reception of two regional news programmes from each main transmitter site. In addition to news broadcasts that were focused on the area in question, viewers would also be able to receive an additional news programme that focused on an adjacent area.

Thus, SVT2's digital terrestrial broadcasts needed to be expanded; this work commenced in

⁷ Visby/Hammen

⁸ Kungsberget, Lumsheden, Svartnäs and Åmot.

⁹ Expansion of the digital terrestrial network – establishment of new transmitters, converting existing transmitters, clean-cut solutions and frequency changes – see Appendix 6.

¹⁰ The transmitter site in Trelleborg/Gylle was then expanded to enable it to broadcast multiplex 5 from 15 October.

¹¹ Prop. 2003/04:118, p. 6 and SVT's strategy for 2009 as summarised in the brochure "Fri television i världsklass" ("World-class free TV"), p. 17f.

2005. Households were able to see regional news programmes from 25 main transmitter sites by the end of 2005/beginning of 2006. Work to this end was subsequently completed in 2006 when the remaining 29 main transmitter sites were expanded to enable reception of two regional news broadcasts. However, the viewer had to re-install and search for relevant channels in order to access other regional news programmes.

Expansion in 2007 and the new sixth multiplex

As one aspect of collaboration between Sweden and Finland, TV Finland, a Finnish TV channel, has been broadcast in analogue in the Stockholm area. A great many households addressed the Commission with questions about the future of TV Finland's broadcasts in the face of the switchover that was scheduled for Stockholm on 12 March 2007.

The issue was resolved when the Government granted the National Association of Finns in Sweden a licence to broadcast TV Finland over the digital terrestrial network after the digital TV switchover was complete. The broadcasts required a new multiplex. The multiplex's remaining capacity has been used to develop and test new digital services. Due to the granted licence, TV Finland's coverage is greater now compared to the level of coverage it had on the analogue terrestrial network, since the entire Mälardalen region is covered by the new multiplex.

Work has been initiated on the transmitter sites included in phase 5 and that were to be expanded in conjunction with the digital TV switchover. This work is scheduled to be completed by the first half of 2008. Coverage for multiplexes 2-4 will thus slightly exceed 98% when the switchover is complete.

2. THE MARKET AND DEVELOPMENT 2004–2007

Tracking development in the digital TV market has been an important aspect of the Commission's assignment. Among other things, tracking has comprised

- development of new technical solutions
- competition among producers and suppliers of set-top box equipment
- price development of various set-top boxes
- accessibility to programme services
- rate of consumer acquisition.

An important point of departure has been to communicate consumer needs to producers and suppliers.

The market for set-top box equipment has developed quickly in terms of both price and technical solutions. For example, there was only one DTT receiver available for under SEK 1,000 before the first switchover got underway. And following the switchover an increasing number of digital receivers with twin tuners (*which allow one channel to be recorded while watching another one*) have been introduced. Following is an overview of the different technical platforms in Sweden. The overview functions as an introduction to the section on market development.

2.1 General market presentation

TV viewing in Sweden

There are approximately 4 million TV households in Sweden. These households are estimated to have just over nine million TV sets that receive TV broadcasts via four technical platforms:

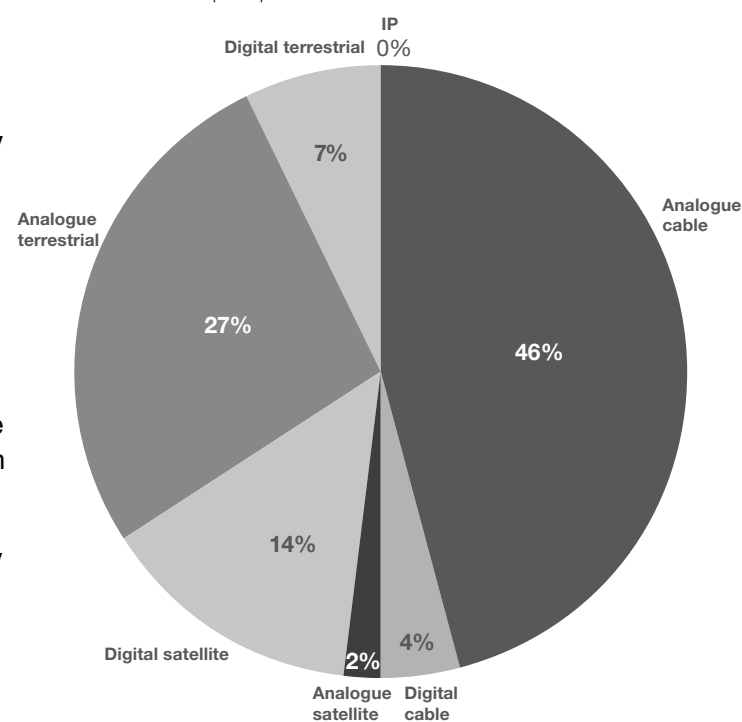
- terrestrial network
- cable TV
- satellite
- broadband, or what is known as IPTV.

Up until the time that the relevant distribution form was digitalised, broadcasting on each of the platforms could be either analogue or digital, with the exception of broadband which is a purely digital platform. In December 2004 – before the switch-over had been initiated – households received TV broadcasts as follows:

- 50% via cable
- 28% via the terrestrial network
(9% of these had already switched to digital)¹²
- 15% via satellite
- 7% via Satellite Master Antenna TV – SMATV
(small cable networks).

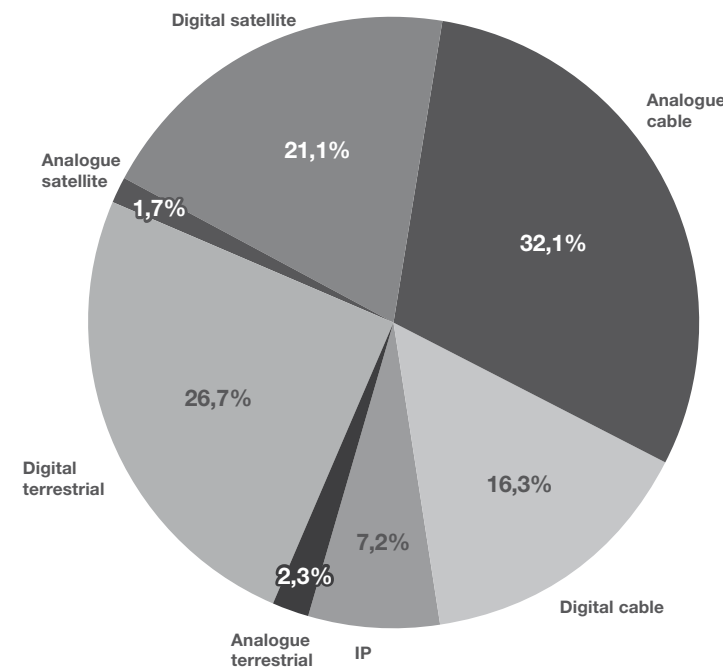
There were also a large number of viewers who used one platform for their first television set, but who used the terrestrial network for other televisions in their home or at their recreational property.

Distribution per platform 2004



Only approximately 25% of all households risked losing their TV reception, but awareness of TV reception was so limited in the remaining 75% of households that it was deemed necessary to inform all Swedish households about the switchover.

National share of distribution platforms, Q4 2007
(as perceived by the households themselves)



The market shares of each technological platform are in principle the same as before the switchover. Note that the diagram depicts the household's own perception of their mode of reception and that the 2.3% that say analogue terrestrial no longer can have this form of reception.

Cable TV and Satellite Master Antenna TV

About half of Sweden's 4 million TV households had access to cable TV by the beginning of 2005. Property owners with blocks of flats generally sign agreements with a cable operator who owns or controls the cable network, and thus determines which channels to offer to connected households. However, the cable operator is always obligated to carry specific channels free of charge for the household within the framework of must-carry regulations. In general, households that receive TV via cable are

offered a basic package including some of the largest TV channels in addition to the must-carry channels. Naturally, additional channels are available if the individual consumer selects an expanded offering. The largest cable operators are:

- Com Hem (which has acquired UPC, a cable TV company)
- Tele2 (previously Tele2 Vision/Kabelvision)
- Canal Digital.

Com Hem is the largest of these (approximately 1.7 million connected households on 31 December 2007). In addition to the large cable TV companies, there are several small cable networks – Satellite Master Antenna TV networks¹³ – that are found in multiple occupancy dwellings, terrace houses or residential areas with single family homes. The property owner or housing association functions as the operator in a SMATV network, and is thus responsible for offering programme packages and ensuring that must-carry regulations are adhered to.

¹² Mediavision's Digital TV tracking, December 2004. Mediavision is an independent company that performs analyses within digital media and TV. www.mediavision.se

¹³ Satellite Master Antenna TV. TV broadcasts are received via a MATV (terrestrial network) that are supplemented with satellite reception (pay television). The broadcasts are retransmitted from a headend to households in small cable TV networks that may comprise a housing association and/or individual multiple occupancy dwellings. The property owner is the network owner/operator.

Digital TV via cable networks was still unusual when the Commission embarked upon its assignment. Though Com Hem, UPC and Canal Digital Kabel-TV offered their subscribers digital TV, only an estimated 11% of all cable households had acquired a digital TV receiver for cable TV broadcasts in 2004. (Source: Mediavision, estimate Q4 2004.)

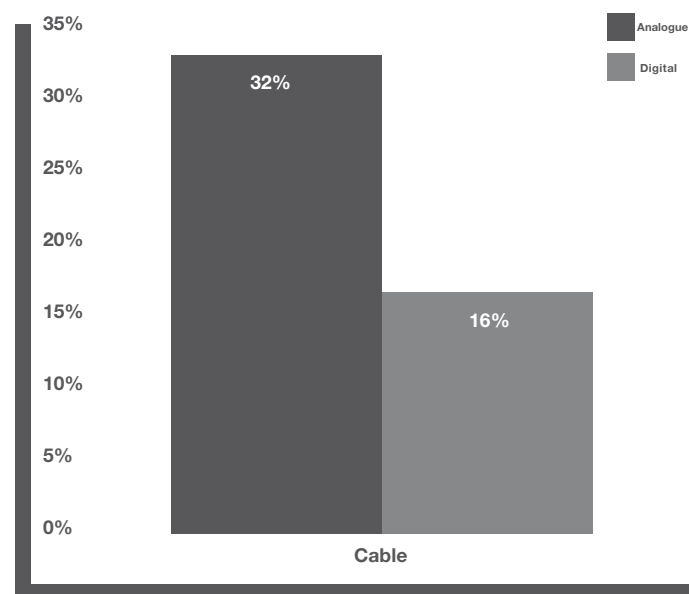
Terrestrial TV - television via a regular aerial

Teracom owns and operates the terrestrial network, from which broadcasts are received via a roof or indoor aerial. Distribution is assigned by the various broadcasters, and different coverage requirements are stipulated in the broadcasting licences granted by the Government. Digital technology has been used to broadcast over the terrestrial network since 1999 in Sweden.

The digital terrestrial network currently consists of five transmitter networks or multiplexes. Multiplex 1 reaches 99.8% of permanent Swedish households, multiplexes 2-4 approximately 98% and multiplex 5 approximately 70%. Multiplex coverage has been gradually expanded since 2004. Each multiplex can accommodate up to seven different programme services depending on programme content and compression.

In compliance with their broadcasting licences, some broadcasters such as SVT must supply unencrypted broadcasts, i.e. freeview TV. Other broadcasters with permission to broadcast over the digital terrestrial network can choose to broadcast unencrypted or encrypted (*as pay channels*). Anyone wishing to view pay television channels must possess a digital receiver with a smart card slot and a Boxer subscription; thus far, Boxer is the only operator in the digital terrestrial network.

National share of digital and analogue cable, Q4 2007 (as perceived by the households themselves)



The share of digital households is increasing steadily and can be explained by the fact that general interest for different solutions for digital TV is rising.

Channels in the digital terrestrial network

Multiplex 1	Multiplex 2	Multiplex 3	Multiplex 4	Multiplex 5	Multiplex 6
SVT1	TV4	Canal+ Hits	Eurosport	BBC World	SVT HD
SVT2	TV4+	Canal+ First	MTV/VH1	BBC Prime	
SVT24	TV400	Canal+ Sport1	Star/Nickelodeon	travel&living	
Barnkanalen/ Kunskapskanalen	CNN	Kanal 5	Kanal 9/The Voice	TCM	
SVT Extra	TV4 Film	TV3	Discovery	silver	
	TV4 Fakta	Kanal 8	Animal Planet	Axess	
	Kanal 6	Disney/7	Z-TV	Aftonbladet/7	
				Regional channels (Kanal Lokal)	Regional channel

Source: Teracom, 2008-01-30.

There are significantly more channels broadcast in the digital terrestrial network than were broadcast in the analogue terrestrial network where only SVT1, SVT2 and TV4 were transmitted. After the allocation of new broadcasting licenses in 2006, the number of free channels in the terrestrial network rose to 10.

Satellite platform - TV via satellite dish

There are two primary players (or operators) in the Swedish market that broadcast via satellite to individual subscribers¹⁴: Canal Digital and Viasat. Canal Digital has a slightly higher number of subscribers in the Nordic countries¹⁵. Satellite distribution from both these operators has been digital since 2004; since that time, all of their subscribers have had to obtain a digital satellite TV receiver, DVT-S standard. However, analogue satellite reception still exists, primarily to households that receive broadcasts from other countries. Both Canal Digital and Viasat offer pay television channels, radio stations and interactive services (pay-per-view and electronic programme guide, EPG) within the scope of their subscriptions.

74 One competitive disadvantage for satellite platforms compared to other technical distribution forms has been that Canal Digital and Viasat have for a long time chosen to distribute certain channels exclusively. This meant that two of the major commercial channels on the Swedish market, TV3 and Kanal 5, were not broadcast to all satellite households; rather, they were only distributed to certain subscribers (TV3 to Viasat subscribers and Kanal 5 to Canal Digital subscribers). In February 2008, however, the two satellite operators agreed to waive their exclusive rights to the channels.

Households that are connected to Satellite Master Antenna TV also receive satellite broadcasts,

but indirectly. Broadcasts (which can serve as a complement to terrestrial network broadcasts on this type of network) are received in a headend; digital signals are converted into analogue signals and then sent to households. The property owner or housing association decides which satellite-broadcast channels to include in the network. An agreement is subsequently signed with Svensk Programagentur AB (SPA) or Canal Digital Kabel-TV (the Satellite Master Antenna TV content providers).

Broadband TV

There were very few households receiving TV via broadband, or IPTV, when we embarked upon our assignment in 2004, but the platform has steadily grown as the digital TV switchover has progressed. This platform has been solely digital since its introduction. One of the reasons is that high speed city networks have been greatly extended over the past few years, and an increasing number of households have connected to broadband via these networks. Some of the major operators are:

- Bredbandsbolaget
- Telia
- FastTV
- Viasat/Tele2
- Canal Digital.

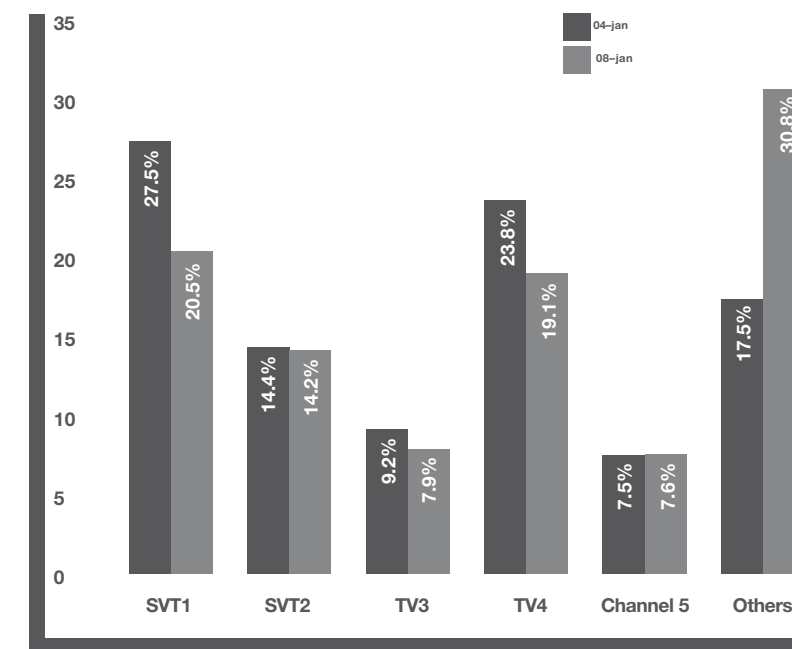
TV channel offerings vary depending on the selected operator, though all of the major TV channels are included as a rule.

Viewer ratings - niche viewing increases with digitalisation

As early as 2004, 78% of Swedish households had access to channels other than SVT and TV4¹⁶. This proportion has gradually increased as the digital TV switchover has progressed, and since the middle of 2007, MMS (a survey company) has stopped accounting for "multiple-channel viewing households" separately. Television viewing was characterised by the five major channels in 2004 – SVT1, SVT2, TV4, TV3 and Kanal 5 –

which had a combined 80% share of viewer hours. The remaining 20% was distributed to around 30 niche channels for film, sports and lifestyle (TV4 Plus and TV6, for example). The number of viewer hours attributed to the "Big Five" has diminished at the same rate that an increasing number of consumers have gained access to more channels; this applies in particular to the public service channels. In 2007, 70% of viewer hours were distributed to these channels, while the various niche channels received 30% of total viewer hours.

Share of Viewing, January 2004 and January 2008



It is evident that niche TV channel viewing has increased. A large number of channels with few viewers turn TV viewers into TV consumers.

¹⁴ DTH; Direct-To-Home

¹⁵ The Radio and TV Authority: Medieutveckling 2007, p. 62 ("Media development").

¹⁶ Statistics from MMS 2004.

2.2 Market development in 2005

Freeview TV in focus

In autumn 2005, an issue that gained importance concerned the agreements SVT had drawn up to ensure free access to the company's channels. The two companies transmitting on the analogue network, SVT and TV4, had a previous agreement with Viasat and Canal Digital that stipulated the satellite companies supply a smart card (*against a deposit*) to consumers who wanted to have access to the channels but who did not wish to subscribe to other channels. This option was of particular interest to viewers who lived in areas with poor conditions for terrestrial reception, making satellite reception the only realistic alternative.

However, both satellite companies provided insufficient information about the "deposit" smart card, resulting in households not really understanding what the option entailed. SVT, TV4 and the Commission actively provided information about this option, and SVT also put pressure on the satellite companies to improve their information.

Since the new must-carry regulations did not guarantee full access to SVT's entire offering before the digital TV switchover was complete, SVT also signed an agreement with the major cable operators Com Hem and UPC to supply all of

SVT's channels within the scope of their basic packages. SVT was forced to follow up consumer complaints concerning access to SVT's channels from these two companies on several occasions during the course of the switchover. Issues related to the range offered on the cable network and interpretation of must-carry regulations are still current, at the end of 2007/beginning of 2008.

TV4's concession fee

By law¹⁷, TV4 has been obligated to pay a concession fee. TV 4 has been the only broadcaster entitled to broadcast commercial television to the entire country in the analogue terrestrial network. The concession fee consisted of a fixed portion and a variable portion linked to TV4's advertising revenues. On 22 December 2004, TV4's licence to broadcast in analogue was extended by a Government decision to the end of January 2008¹⁸. At the same time, the Government decided that the Digital TV switchover would be initiated, and that TV4 would thus no longer be entitled to broadcast with analogue technology to the areas included in the first phase of the switchover¹⁹.

The rules on concession fees were amended on two occasions in 2005²⁰. The changes meant that the obligation to pay the concession fee would

continue to apply as long as TV4 broadcast over the analogue terrestrial network, but that the fee would gradually decrease as analogue broadcasting ceased in conjunction with the digital TV switchover. This served as an additional incentive for TV4 to take part in switchover activities. Our collaboration with the company intensified after the decision was made. For example, a digital TV representative was appointed to take responsibility for TV4's collaboration with the Commission as well as for the company's communication with viewers.

Greater amount of security for consumers

Two factors have been important in terms of maintaining adequate set-top box quality during the entire switchover:

- the various operators' requirements for approved digital TV receivers when subscribing
- Teracom's testing of DTT receivers.

Tested and approved set-top boxes offer consumers an increased level of security in terms of reliability. At the same time, there has been an untested range of DVB-T receivers available all along. According to industry reviewers, a growing number of these work very well. One conclusion, thus, is that recommendations to purchase a tested set-top box have encouraged suppliers, merchants and TV viewers to perform/ask for quality assurance, which has led to an adequate range of digital TV receivers being available.

As soon as a decision regarding testing had been made, the Commission decided to recommend tested set-top boxes across the board. Our website only referred to individual platform operators and DTT receivers that had been tested by Teracom.

Sales figures for 2005

Thus in 2005, around 450,000 DTT receivers were sold. During the first switchover in Gotland, only one particular box, the Multibox, was on backorder, primarily due to a lack of component parts. We realised that even if individual products could become scarce, the market as a whole offered a sufficient number of alternative products to ensure that households would not have to do without a digital receiver on switchover day.

Scepticism on the part of retailers to the switchover was also clearly showing signs of changing for the better by the end of phase 1. Another aspect was that retailers and installation engineers were more important than we initially realised. They received a great many questions from consumers, and handled the situation in an exemplary manner as time progressed. In conjunction with switchover days, for example, they provided many TV viewers with basic information as well as technical information related to reinstallation of set-top boxes and frequency changes.

¹⁷ Act Regarding Concession Fees for Television and Radio (1992:72).

¹⁸ Government decision Ministry of Culture 22.12.2004 no. 60.

¹⁹ Government decision Ministry of Culture 22.12.2004 no. 59.

²⁰ Prop. 2004/05:155, bet. 2004/05:K16, rskr. 2004/05:294, prop. 2005/06:1 utg. omr. 17, bet. 2005/06:KU11, rskr. 2005/06:66.

Increased product and service offering in 2005

Several new products were launched before phase 1, even if they were not yet common on a local level. Examples are USB digital receivers, receivers that connect directly to the scart connector, and several digital receivers with a hard drive. The price for a tested digital receiver without a subscription or any extras was between SEK 700 and 1,300.

The range of products had expanded considerably by the end of 2005 compared to 2004, and several new products had been launched. One example was the discussion about the feasibility of HDTV before the European Football Championship in 2006. The different operators' ranges had also developed, and most of them offered some type of installation assistance. They had also expanded their ranges to include short-term subscriptions, children's packages and twin cards. Of these developments, twin cards were of particular interest to many consumers who wanted access to subscription offerings for multiple TV sets in the household without needing to subscribe to multiple subscriptions. Satellite operators also opted to reduce the price of their basic subscriptions.

PTS opens Teracom's network to competition

On 15 December 2005, the Swedish National Post and Telecom Agency (*PTS*) decided that Teracom was obliged to open the terrestrial network to competition within terrestrial TV and radio²¹. PTS' decision meant that other companies could be granted access to the terrestrial network for TV transmission by requesting placement at the transmitter site or by purchasing the transmission service. Teracom's prices for services were to be based on actual production costs. An operator could only be refused access to the network on objective grounds such as technical feasibility or network integrity. Teracom appealed the decision, but it was upheld by a court of law.

At the time of this writing (*February 2008*), SVT and UR are in the process of renewing their agreements, and it is not certain that Teracom will be awarded the public service broadcasters extended agreement for TV distribution over the terrestrial network.

2.3 Market development in 2006

Licensing on the digital terrestrial network

On 23 February 2006, the Government decided to renew broadcasting licences for the digital terrestrial network²². In addition to the licences that were extended, seven new licences were granted:

- Three for the following pay television channels – C5 (*now Kanal 9*), BBC Prime and NonStop Filmfestival (*now Silver*)
- Four for the following freeview channels – TV6, Aftonbladet TV7, The Voice and Axess TV.

This meant that from autumn 2006, the number of freeview channels on the terrestrial network would increase from six to twelve. The problem was that the channels needed to be accommodated on 10 slots. The solution involved issuing shared broadcasting licences; for example, Aftonbladet TV7 broadcast on weekdays and Axess TV on the weekends. These broadcasting licences are valid until 31 March 2008.

Dialogue with the Swedish Disability Federation (HSO)

In collaboration with HSO, the Commission held a workshop on the topic of Digital TV and accessibility in March 2006. The aim of the workshop was to gain more insight into the special needs that would arise as a result of the digital TV switchover. Our hope was for the workshop to produce concrete ideas for products and services that might facilitate the switchover. The work-

shop was led by researchers from the Royal Institute of Technology. Participants included individuals with impaired vision, hearing or reduced cognitive capability, as well as representatives from SVT, Teracom, Boxer, A2B, the Swedish Consumer Agency, Sagem and Expert (a major chain of retail stores for electronic goods). Primary focus was on adapting existing products, and audio played a central role. The text to speech function used by SVT was praised by users, and several participants requested solutions that were based on the idea of reading text aloud. A renewed dialogue in late autumn 2007 will hopefully result in the Commission being able to submit survey material and facts to HSO so the organisation can pursue improved solutions.

Attempt to collaborate on an international level

Inspired by the workshops on accessibility and a study visit to the United Kingdom in May 2006, we initiated international collaboration for digital TV products. Collaboration primarily pertained to niche products aimed at small groups or markets, for example digital receivers that convert a limited number of channels for a number of different televisions in the same household.

In collaboration with different producers, we looked into the feasibility of arranging joint activities directed to foreign markets. Meetings were held with the Ministry of Industry, Employment

²¹ PTS dnr 05-8675/23. The decision was made in accordance with the Law (2003:389) on electronic communication.

²² Governmental decision Department of education and culture 2006-02-23 nr I:15.

and Communications, the Ministry for Foreign Affairs and the Swedish Trade Council. All of these parties were interested in hosting an event such as a small trade show aimed at the British market. However, Swedish producers had difficulty producing functioning prototypes far enough in advance and to the extent necessary to ensure the event would be meaningful. It was also difficult to establish contact with the appropriate individuals at the relevant companies. As a result, the event was postponed to some undetermined future date. The initiative finally fizzled out, primarily due to a lack of interest on the part of producers.

Teracom broadcasts mobile TV on a trial basis

In autumn 2006, Teracom conducted the first test broadcasts of mobile digital TV on the digital terrestrial network using DVB-H technology²³. The test broadcasts included the Stockholm inner city area and the suburb Sundbyberg. The broadcasts constituted a consumer test with the aim of ascertaining user behaviour and perceptions of mobile TV. The objective was to facilitate market assessment prior to initiating mobile TV broadcasts.

The test was performed in collaboration with ATG, Boxer, Nokia, SR, SVT, UR and Telenor, and included 400 consumers over a three-month period. These 400 people were able to receive thirteen TV channels – both pay television and freeview – as well as three radio stations. Broadcasts were received via a Nokia N92 with an integrated DVB-H

receiver. Teracom described the test as successful, and predicted that there would be willingness on the part of consumers to pay for mobile TV services²⁴.

PTS report on frequency space

In 2005, the Government assigned²⁵ PTS with investigating which frequency space could be freed up when analogue terrestrial TV broadcasts ceased, as well as how the space could be used. The assignment was prompted due to the approaching switchover and a statement made by the Radio Spectrum Policy Group (RSPG), which is the European Commission's advisory body for frequency issues. The PTS assignment was to elucidate the various consequences of alternative uses, such as:

- how existing and new frequency users are affected
- the possibility of taking advantage of existing investments in the infrastructure
- prerequisites for developing products and services for an international market.

According to PTS' final report (*1 September 2006*)²⁶, the freed up frequency space constitutes a vast and valuable resource for which there are a great many areas of use. The report mentions, for instance, additional TV broadcasts in standard format, HDTV, mobile TV and fixed or mobile broadband. PTS also presented a spectrum policy in autumn 2006. According to the policy, frequency space should primarily be auctioned off,

and the granted licences should be as technically and service-neutral as possible.

Free broadband TV opens the market

In the latter part of 2006, Telia was the first broadband operator to launch broadband TV with its Start package. Consumers were allowed to test the service free of charge. The offering included SVT1, SVT2, Barnkanalen, Kunskapskanalen, TV4, Aftonbladet TV 7 and The Voice. Access to the package presupposed that the customer already had a Telia broadband subscription and fixed telephony with Telia preselection. The offer was similar to Com Hem's successful Triple Play offer.

Developing freeview TV via satellite

Freeview TV via satellite was further developed in 2006. Canal Digital was already offering all of SVT's channels and TV4 against a deposit. The offer was developed from consisting of one smart card per broadcaster to one smart card for all of the channels, and the price was reduced to SEK 795. Viasat also developed its freeview TV option by increasing the offering from only consisting of SVT and TV4 to including TV6 and Aftonbladet TV 7 as well. Viasat also did away with the deposit requirement and smart card, and required that the consumer have a Viasat-approved set-top box instead. The consumer used a personal code to access the relevant channels.

HDTV via cable

In December 2006, the major cable operator Com Hem launched a HDTV package including a HDTV receiver at a cost ranging from SEK 1,995 (*24-month fixed term*) to SEK 3,495 (*no fixed term*). Like the HDTV package that had already been launched by Canal Digital, Com Hem's package was offered as a supplement to a basic subscription. The package included Discovery HD and VOOM HD (*all of Com Hem's digital TV customers have access to SVT HD if they have a HDTV receiver*). Canal+ HD was available as part of some of the Canal+ packages. By the end of 2007/beginning of 2008, Com Hem could offer 130 channels, five of which were offered in HD format.

SVT's HDTV strategy

At the end of 2006, SVT announced it had revamped the strategy for HDTV broadcasts it had presented in February of that year. The reason for the modification was that SVT's broadcasting licence had been reduced from six to three years and because SVT wanted to await a Government decision on using the frequency that had been freed up due to the digital TV switchover.

HDTV was still a priority for SVT, and programme production was already in the process of being adjusted. SVT believed, though, that the HDTV strategy it had announced in February 2006 in conjunction with an industry seminar would not be feasible before it was clear how the freed-up frequencies from the terrestrial network would be distributed.

²³ The pilot lasted from 7 October 2006 until 31 January 2007.

²⁴ MMS report from the pilot project dated 28 March 2007.

²⁵ Government decision Ministry of Industry, Employment and Communications 2005-10-27 no II:11.

²⁶ PTS reg. no. PTS-ER-2006:35.

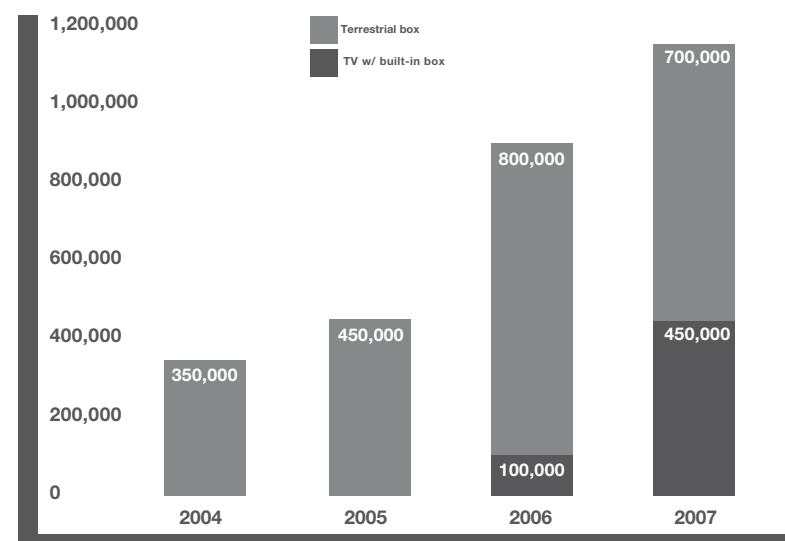
Product offering

All three major electronics chains were marketing digital TV receivers for most platforms by the beginning of 2007. Internet sales had also increased. There were over 400 digital TV receivers in the Swedish market at that time²⁷. Of these, just over half were integrated DTT receivers, and the remaining 200 were freestanding digital receivers. Just over half of the freestanding set-top boxes

were terrestrial receivers and half were satellite receivers. There were also a small number of cable receivers.

Several new products were launched in 2006. One example is the Slingbox receiver. This product makes connecting to a subscription via the Internet possible, which enables access to channel offerings all across the globe. The offering was also large for consumers who had sub-

Sales of digital TV receivers 2004-2007
Total, number of units



There is still considerable interest for free-standing digital boxes despite the fact that the selection of TVs with built-in boxes is increasing.

²⁷ Search on Pricerunner (*website*) at the beginning of February 2007.

²⁸ The Multibox receiver was the subject of a great deal of discussion in phase 1. It was considered a unique product in that it enabled simultaneous reception of three freeview channels on up to eight televisions in the home. See www.multibox.se.

scribed and were thus bound to their operator's approved set-top boxes. For example, Com Hem offered 13 approved set-top boxes, and Viasat offered 17. Boxer had 162 approved set-top boxes in its offering by the end of 2006. Broadband TV boxes were an exception. At the beginning of 2008, there were only a small number of approved receivers of this type on the market.

Tested set-top boxes

In 2006, Teracom tested a total of around 90 digital TV receivers, which was a pronounced increase compared to the 18 DTT receivers that were tested in 2005. By the end of 2006, Teracom had tested over 130 digital TV receivers. Of these, 82 were TV sets with integrated DTT receivers, but only four were set-top boxes without a smart card slot. Multibox²⁸, which had previously been in the spotlight, was not tested in 2006, resulting in attention being diverted from the product. One presumption is that Teracom's DTT receiver testing was most crucial during the first year of the switchover in 2005, and that the most important aspect of testing was encouraging healthy self-adjustment of the market.

The retail chains that sold untested terrestrial receivers were initially hit by a large number of complaints. This led to merchants reviewing their range and more clearly communicating which set-top boxes had been tested.

As a point of comparison, Finland does not have a testing procedure, and many TV viewers are dissatisfied due to the poor quality of their set-top boxes. Among other things, this has resulted, in many Finnish TV viewers refusing to pay their television licence fee.

Price development in 2006

Prices for digital TV receivers did not fall to any great extent in 2006. For example, a tested digital receiver still cost SEK 800-1,300 without a subscription for a simple model. However untested digital receivers were much less expensive, around SEK 400. The average price for a digital receiver with extras such as twin tuners and a hard drive was around SEK 3,000-5,000. At the same time, TV sets with an integrated receiver were not much more expensive than normal TV sets.

New services in 2006

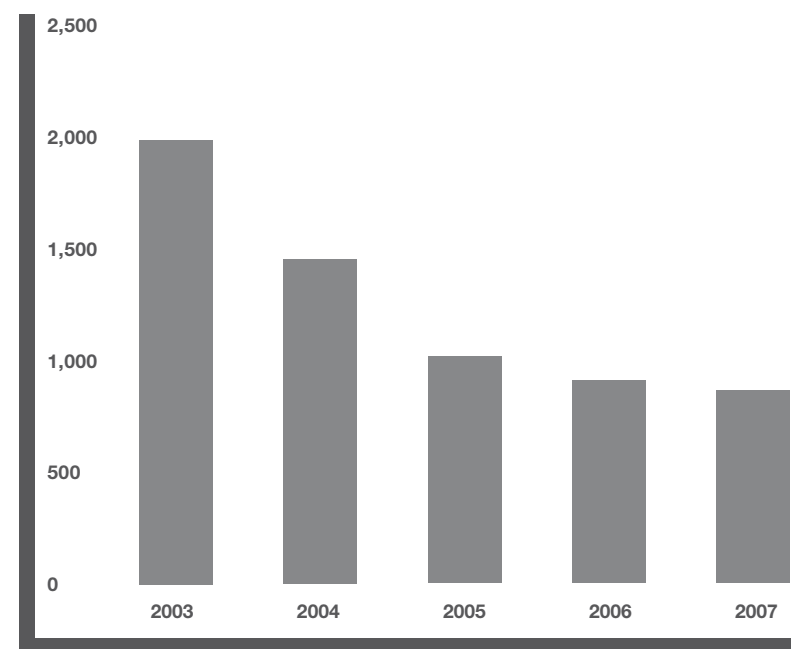
As opposed to the product range, the channel offering remained basically unchanged in 2006, but several operators offered more channel package options. The main aim was to satisfy consumer need to take advantage of channel offerings on all of the household's TV sets without the necessity of purchasing multiple subscriptions.

As a result, different operators – on all of the platforms except broadband – marketed “twin” or “multiple” subscriptions. These offers included digital TV receivers and smart cards for up to five TV sets in a single household under a single subscription.

Basically all of the operators began to allow consumers to choose the duration of their subscription. Customers who chose longer fixed terms were offered installation assistance and/or a set-top box free of charge. In 2006, several operators

such as Com Hem, Fast-TV and Boxer also began offering different types of ongoing subscriptions, with no or very short fixed periods. This development has very likely benefited the market for pay television among recreational home owners.

Price development of digital TV boxes 2003-2007
Consumer prices, including VAT, SEK



In 2003, a digital TV box cost approximately SEK 2,000. Today, a digital box for the terrestrial network costs under SEK 1,000. In other words, the large fall in price occurred before the switchover.

2.4 Market development in 2007

New products and services

In 2007, several major producers began integrating digital TV receivers that were able to cope with MPEG-2 and MPEG-4 into their TV sets. Solutions involving a module that enabled consumers to gain access to HDTV without the necessity of investing in a new set-top box also emerged. Digital TV receivers that can be connected to a computer also became increasingly common, which can be interpreted as an increased interest in mobile products.

Broadband TV gains momentum

At the end of 2007, it was clear that broadband TV was a successful option²⁹. At the beginning of 2008, for example, Telia had just over 300,000 subscribers. Despite some capacity distribution issues between broadband services and TV services, interest in broadband TV has established itself as a distinct fourth platform. Various multiple subscriptions were still in demand in 2007, and Com Hem also launched a twin subscription for its digital TV customers.

New sales record

At the end of 2007, ElektronikBranschen (*industry organisation for suppliers and retailers within*

consumer electronics) estimated that sales for the year would reach 860,000 digital TV receivers – far beyond the forecasted 750,000. A tested, simple-model digital TV receiver with DVB-T standard cost from SEK 500 at the end of 2007. An electronics publication tested retailer information to consumers, and concluded that the provided information was as a rule very good.³⁰

Boxer's monopoly ends

In 2007, the Government worked out a bill for a new system to grant terrestrial network licences in order to

- open the terrestrial network to competition between operators
- transfer the licence granting function from the Government to the Swedish Radio and TV Authority

The bill was formulated in response to the European Commission initiating infringement proceedings against Sweden. The conditions stipulated in the broadcasting licences for digital terrestrial broadcasts – which forced broadcasters to engage Boxer for access control – were believed to be in violation of the EC's directive on competition in electronic communication markets.

²⁹ The offer gave households free digital TV for a period of time in exchange for agreeing to a specific fixed period of subscription. Broadband and fixed telephony from Telia were required.

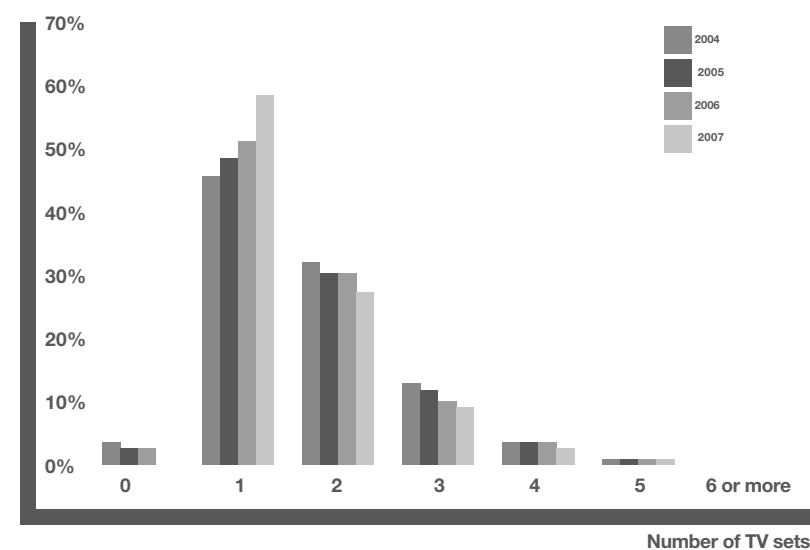
³⁰ Prynportalen ("*gadget portal*"), 2007-11-05, "Prynportalens reporter fick rätt hjälp i butikerna" ("*Prynportalen's reporter got the help needed from shops*").

Thus in 2007, the Government proposed new rules for granting licences for digital terrestrial TV. The new rules allow broadcasters to choose their preferred company or companies to handle access control and to market programme subscriptions. On 29 November 2007, after the Riksdag had approved the new rules³¹, the Government removed the stipulation of engaging Boxer from broadcasting licences. The same decision extended all of the previously granted digital

terrestrial broadcasting licences to 31 March 2008.³²

According to the new legislation which went into effect on 1 February 2008, the function for granting licences for digital terrestrial TV will be transferred from the Government to the Radio and TV Authority. This applies to all licences except those for SVT and UR, the public service companies.

Distribution of functional TV sets per household, 2004-2007



The number of TV sets declined as a result of the fact that households have chosen not to buy a digital TV box for their old TV sets.

³¹. Prop. 2007/08:8, bet. 2007/08:KU4, rskr. 2007/08:40.

³². Government decision Ministry of Culture 29.11.07 no. 1

³³. Government decision Ministry of Industry, Employment and Communications 19 December 2007 no. II:7

Utilising freed-up frequencies

As soon as the last of the five phases of the digital TV switchover was completed on 15 October 2007, the TV industry turned its attention to the frequencies that had been freed-up as a result of the switchover. HDTV had already been a frequently discussed topic in the debate on frequencies; it now became something of a symbol for the future of the TV industry. Lobbying for frequencies to be used for mobile electronic communication services was set against the wishes of the TV industry. The constitutional committee of the Swedish Parliament, the Riksdag, had a hearing on 22 November 2007. The TV industry was united on the issue of introducing HDTV to the terrestrial network. The media misinterpreted this information to mean that Sweden, which had just completed the switchover to digital terrestrial TV, would now be forced to switch over to HDTV in the near future. Reactions were quick – angry letters to the editor were immediate.

On 19 December 2007, the Government made a decision regarding broadcasting space for terrestrial TV. PTS was also assigned with reorganising frequency utilisation in the UHF band.³³ The decisions mean that:

- space will be created for six multiplexes for TV in the frequency area under 790 MHz in the UHF band, and there will be no TV broadcasts in frequencies over 790 MHz
- Space corresponding to an additional multiplex in VHF band will be made available to TV broadcasts. This is the space in which SVT1 previously broadcast with analogue technology.

When the reorganisation is complete, it will be possible to broadcast TV in the terrestrial network via seven multiplexes. At the same time, PTS will be able to allocate frequencies for other electronic communication services in the upper part of the UHF band.

3. INFORMATION CAMPAIGN

3.1 Analysis, strategy and communication platform

Disseminating information has represented the largest component of the Commission's assignment. Widespread awareness of digital TV among Swedish households was clearly identified as a necessary underlying factor for a smooth switchover. We were initially faced with a number of challenges in terms of disseminating information. The digital TV switchover quickly became a charged issue, both politically and with the general public – mostly due to the fact that it was mandatory. The timeframe was tight and resources were meagre. Because Sweden was one of the first to implement the switchover, we had limited opportunities to draw upon the experiences of other countries. Thus, we initially concentrated on performing extensive analyses.

Basic analysis

External environment analysis

The Commission was formed in May 2004, and as one of its first activities, representatives visited its counterpart in Berlin at the beginning of June 2004. Germany was in the initial phases of switching over to terrestrial digital TV, but as one of the very first cities in the world, Berlin had already digitalised its terrestrial network in August 2003. By German standards, the transition of roughly 200,000 households was small-scale, but the ex-

perience was beneficial for Sweden – in particular in terms of consumer and household behaviour and the relationship to municipalities. However, the most important lesson we learned from the visit was that we should not focus on trying to resolve all potential problems in advance.

Back in Sweden we met with representatives of two relevant community projects: the PPM (*Premium Pension Authority*) project and the Swedish Environmental Protection Agency's "Climate Campaign". We were interested in finding relevant examples of how information dissemination resources could be optimised, and in ascertaining the most effective initiatives in terms of meeting the general public's need for information and understanding. The meetings were fruitful; however, we would have preferred to have drawn upon the experiences of the 1960s' project of switching over to right-hand traffic. It is the only campaign in modern times that disseminated information about a mandatory and unavoidable change that would affect basically every single citizen. There was, however, no detailed documentation related to information dissemination from the switchover in the 1960s.

In the lack of concrete examples, the most important insight that emerged from the introductory

exchange of experiences was to identify and attempt to avoid the worst pitfalls rather than do everything right from the start. The absence of debate and a state of calm after the completed switchover would be viewed upon as testimony to a well-implemented assignment.

Analysis of interest

After an initial external environment analysis, we performed a comprehensive analysis of which stakeholders were active in the "digital TV switchover arena" in August 2004. The aim of the analysis was to clarify the conditions for the digital TV switchover, as well identify relevant stakeholders and players.

Collaboration among many special interest organisations

Collaboration partners

Partners: Teracom, SVT, TV4.

Teracom, which is responsible for the terrestrial network, played a central role in the technical implementation. SVT and TV4 provide the free analogue terrestrial channels and therefore were a natural part of the cooperation. *Teracom, SVT, TV4*

Electronics industry

Manufacturers, retailers, antenna installation companies.

Both a sense of expectancy and irritation were experienced on the part of the electronics industry. On the one hand, a sound increase in sales was expected; on the other hand, the switchover demanded a great deal of extra work. *Electronics industry*

The Digital TV Commission has worked with a broad approach, but different interest groups have contributed with different roles. Municipalities and organizations have fulfilled an important role by distributing information to the households.

The arena analysis provided a clear idea of who the interested parties of the switchover were. However, the players that we had identified as the most necessary and obvious – Teracom, SVT and TV4 – were not the players that had expressed a great deal of interest in collaborating. Rather, the two pay-TV operators Viasat and Boxer were those that initially contacted the Commission with proposals for subsidised set-top boxes and call centre collaboration. However, we clearly communicated the importance of separating commercial interest from our own assignment of providing impartial and neutral information. Thus, a crucial aspect to being able to uphold the distinct focus of the assignment and to avoid being swayed by the

Pay-TV operators

Pay-TV operators: Boxer, Canal Digital, ComHem, Viasat.

The operators are an important part of the TV viewers' purchase decisions. How much TV do viewers want and which channels are interesting? *Com hem, Canal Digital, Boxer and Viasat*

Municipalities and special interest organisations

Information distributors: Municipalities and special interest organisations. Municipalities are close to the TV viewers and have knowledge about local conditions. Special interest groups such as PRO and HSO function as information distributors, but also as lobbyists for the group's specific needs.

Digital TV Commission

various stakeholders was to set boundaries when prioritising types of collaboration. There was to be no cause for consumers to suspect any underlying commercial interest. As time progressed, we were able to ascertain that the initial interest of several players was largely due to fear of how the switchover and the Commission's work would impact their own market. Many of the players' interest in actively participating probably emerged from a desire to influence the process. However, when it became apparent that the market was not greatly affected, their interest dwindled.

Target groups

The next step of the analysis phase involved charting out the target groups for information dissemination. The fact that many households did not know how they received their TV signals was one of the greatest challenges faced by the project. The majority of households were unaware that there are different TV distribution platforms. Nor were there records specifying which households receive signals via the terrestrial network, cable network or satellite, or how many have more than one television set.

The switchover primarily concerned households that solely received TV broadcasts via the analogue terrestrial network, that is via a regular aerial. In 2004, this corresponded to just over one million TV households in the country. An additional two million households that primarily watched TV via a different platform, but viewed via a regular aerial in summer cottages or caravans, for example, were estimated to be indirectly affected by the switchover.

The combination of these factors made segmenting and defining the different target groups difficult. Basically all of the households in Sweden were affected by the first switchover since they all needed to understand it to determine whether they needed to take action. Thus, our conclusion was to treat all of the households in Sweden as the primary target group.

Objective

Naturally, different people had different needs for information within the somewhat obtusely defined target group. The next step involved establishing the overall objectives for communication work. These objectives were defined based on an awareness-interest-action model.

In a simplified form, the first step of the model (*awareness*) meant that the Commission must help households become aware of and understand what it entails to digitalise the terrestrial network. The second step (*interest*) pertained to our objective of creating a "neutral" attitude in households to the switchover by disseminating impartial and useful information. However, it never strived to create a positive attitude towards digitalisation. In the final step (*action*), analogue terrestrial viewers were defined as the primary target group since they were the ones who needed to act to prevent their television screens from going blank.

Using the terms of reference from the Government as the starting point, measurable objectives were formulated for the Commission's work and information initiatives. During the right-hand road traffic

switchover in the 1960s, insufficient information was associated with mortal danger. This time, in the worst case, households would lose TV reception if information about the digital TV switchover was lacking. Nonetheless, TV is important for a great many people, in particular for the elderly whose television may be their only companion. Sudden inaccessibility to TV was perceived as a threat by all those involved. The fear was that a debate could ensue that questioned the project, or more specifically the digital terrestrial network as such and eventually, the validity of SVT and public service.

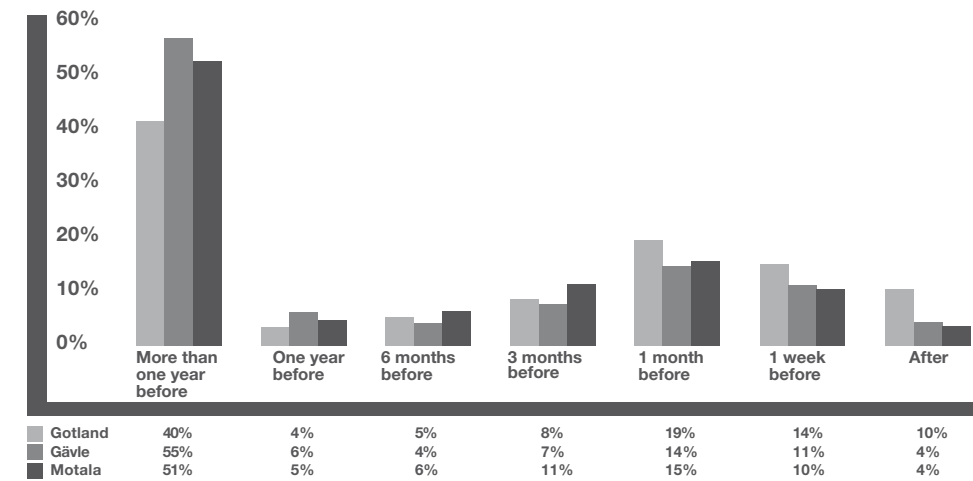
Externally, we indicated moderate figures; internally, however, there was consensus that the tar-

get should lie at raising awareness in ALL households. In other words, lack of information should not be the cause of anyone losing TV reception.

However, it was determined that the decision of how and when to implement a viewing solution should rest with the individual. The objective was that no more than 5% of household television viewers were to drop off. Thus, 95% of households should be able to watch TV from day one, and the remaining 5% that did not have television reception should have actively chosen the situation.

A less explicit objective was for the proportion of television viewing households to be on at least the same level as before the switchover. After the

Time point when digital TV was acquired in relation to the switchover date. Share of all individuals with digital TV



Most households switch to digital TV to have access to more channels or because they were forced to. The latter group is not more dissatisfied than other households, but rather represent a group that feel that TV is less important.

first phase was completed, 98% were able to view television; this is more than the proportion that pays their television licence fee (*generally 90%*).

Resources

The principal working outline as well as a strategic action plan were determined at a Commission meeting in September 2004. According to the strategic foundation, the Commission was to function as a hub, to which other stakeholders could relate and adjust themselves. This would ensure that subtle distinctions and the consumer perspective would not be lost. It would also enable us to keep special interests in check. One advantage of the strategy was that we would be able to coordinate extensive information dis-

semination with the limited resources we were initially given. The 2005 budget was set to SEK five million, an amount that would only suffice to cover postage to barely one million households. However, the budget was increased in conjunction with the first switchover on Gotland in 2005; from that time, the Commission has received sufficient resources from the Ministry of Culture to maintain a basic level of information dissemination. The Commission's information dissemination efforts have cost just over SEK 10 per household – a sufficient amount in combination with the efforts made by other players and a well-planned flow of information to the media. The Commission's efforts have, thus, also served as a catalyst for commercial marketing.

The communication consultants we engaged from the start proved to be important in terms of both strategy and implementation. Positive collaboration with and among consultants has resulted in a stable foundation, and it formed the prerequisites needed for consistency and quality. In order to guarantee integrated communication, we asked our future PR and advertising agencies to resolve a task together. Their ability to collaborate was just as important as the solution they produced.

Communication strategy

Even though the Commission's analysis had determined that basically every Swedish household was directly or indirectly affected and needed to be informed, there were major differences in terms of what various households needed. A report from Mediavision on the market situation in 2004 and household understanding of digital TV and acquisition plans before the switchover identified three clear groups:

- households that already had digital TV
- households that indicated they would never acquire digital TV (*"refusers"*)
- households that were sceptical.

It was believed that the first group acquired digital TV to gain access to additional channels. The second group would probably resist even when given factual and impartial information. The "sceptics" stated that they were not interested in acquiring digital TV, but their resistance was not based on principle in the same manner as the "refusers".

In order to analyse target groups, messages, tone, types and activities in more detail, a number of focus groups were qualitatively interviewed in Stockholm and Gävle in December 2004. The focus group interviews established that the "refusers" should more correctly be designated as "hesitators". Most expressed scepticism because they did not find TV good or important enough to justify investment in new equipment or additional channels. Many perceived digitalisation as market-driven. In other words, they believed the main incentive for digitalisation was based on commercial interest and that the TV industry was working in collaboration with politicians. One common perception was that digital TV could be equated with large programme packages consisting of "American junk channels". No specific differences in terms of geography emerged from the focus groups; scepticism was of the same nature in Gävle as in Stockholm. However, a clear majority of sceptics had cable TV, meaning they were not part of the target group.

In order to optimise resources, the conclusion drawn from the focus groups was that the Commission should focus on the "sceptics", and that information, tone and channel options should primarily aim to meet this group's needs. It was believed that sceptics who received sufficient and factual information would change from a position of initial refusal to neutrality.

Information was designed with the level of knowledge and need for information of sceptics in mind; the information was also expected to meet

The Commission's budget, per year

Personnel costs	2004	2005	2006	2007	2008	Total
Personnel costs, total	1,910,477	3,795,255	3,318,198	2,874,652	158,180	12,056,761
Other expenses						
Travel/Representation, total	94,982	397,578	324,505	300,169	4,492	1,121,727
Goods/Services, total	804,146	13,664,175	14,991,944	13,804,801	-13,940	43,251,126
Total	2,809,606	17,857,007	18,634,647	16,979,622	148,732	56,429,614

The Digital TV Commission's total budget for 2004-2008 was SEK 56 million. In total there are more than 4 million households in Sweden. The allocation per year was related to the size of each phase, i.e. the number of households that would be informed.

the needs of consumers who were more or less neutral in their attitude to the switchover. If the proportion of sceptics who changed their attitude was sufficient, they might also influence the group of “refusers”, whose resistance was based on principle, to heed and accept information.

A basic formulation for information was thus that digitalisation was “natural technical progress”. The question was never if, but when the switchover would take place.

Communication platform

Framework and roles

Based on the completed analysis and strategic choices, we developed a communication platform in autumn 2004. The platform was intended to provide a framework to which the campaign and activities could be related over the entire process. The platform would ensure that the Government’s assignment was fulfilled on a basic level. The platform should be easy to understand and clear in its message. The aim was also for it to be useful to other players as well. Thus, a scaleable model was created – a structured information campaign that could be upgraded at the same rate that collaboration was established, resources increased and knowledge and attitudes to the switchover on the part of households changed.

Dialogue and collaboration with Teracom in particular was reinforced in autumn 2004. In conjunction with the communication platform’s progress, we developed close collaboration with Teracom that characterised the switchover right up until the end. Dialogue with SVT and TV4, the other parties that had been identified as decisive for the success of the project, was initially characterised by a lack of agreement and understanding.

We realised, however, that all three players played decisive roles in terms of disseminating information. By definition, Teracom was responsible for the technical aspects of the conversion, and the company possessed detailed technical know-how. The two broadcasters were important since their channels would be directly affected by the conversion. Furthermore, the general public generally identifies TV with SVT and TV4. In other words: a TV viewer without a detailed level of knowledge who experiences reception problems is more likely to ring SVT and TV4 than Teracom to forward a complaint. Our assessment was that these three parties – in collaboration with the Commission as the responsible authority – could share responsibility for basic decisions, problem formulations and requisite facts.

Other platforms and broadcasters were assessed to play a more peripheral role in terms of pure information dissemination.

Joint trademark

There was a great deal of discussion related to switching off and blank screens in 2004. The concepts were charged with negative associations. Thus, it was important to create a more neutral base from which to discuss. The “switchover” concept emerged as an alternative to “switching off”. The challenge involved creating the prerequisites necessary for consumers to perceive facts and objectivity.

A specific trademark was created to enable the Commission to function as a hub for information dissemination and that also allowed other players to take part: “the digital TV switchover”. The aim was for the Commission to produce a joint trademark that would enable collaboration and synergy as well as serve as a clear sender of information. Communicating under a joint trademark also offered clear advantages since the switchover as a process was limited in time.

A central strategy involved working from an integrated communication model from the start. All information dissemination would, to the greatest extent possible, work in unison, and the message and messenger would be in focus when decisions related to channels and activities were made.

The tone of information should be factual, brief, informative and neutral.

3.2 Implementing each phase

Phase 1 – First time

Foot work and gaining support

Prior to implementing the first switchover, all of the involved players were fully aware of the significance of Gotland. The first phase was of central importance for the entire digital TV switchover in terms of preparation, information to households and purely technical conversion. This meant that we, in collaboration with other players, produced a model that could be evaluated on an ongoing basis as it was put into operation. It was clear as early as April 2005 that external pressure was contributing to positive and constructive collaboration among the central players. No one player was in a position to cope with the task single-handedly. Each and every misstep entailed a negative stamp on the project that would be difficult to eradicate. There was no room for mistakes.

The media in general, and the local press in particular, were quickly identified as key players since the switchover was expected to generate extensive media coverage – especially of the first areas scheduled for switchover and if anything went awry. Our strategy was to consider any and all reporting as positive, since the level of knowledge was so low and public opinion was sceptical. Bringing the issue to the notice of the general public and creating awareness and consciousness were prerequisites for more directed information initiatives at a later stage. Letters to the

editor, debate articles and interviews also offered a chance to clear up misunderstandings and reiterate the basic message of: “Only consumers with a regular aerial are affected.”

However, before we could get down to working seriously with the principal part of the assignment – informing Swedish households of the switchover – we were faced with the necessity of gaining support. We spent a considerable amount of time and energy in autumn 2004 and the first half of 2005 creating a model for collaborating with municipalities, broadcasters, the electronics industry, various special interest groups and public opinion makers. The platform was created during phase 1, but continuous dialogue and collaboration with each of the relevant players was a prerequisite for smooth implementation of all of the phases.

Municipal involvement

We had established close collaboration and held municipal meetings as early as 2004 with the three main municipalities included in phase 1: Gotland, Gävle and Motala.

We invited public relations officers and municipal leaders to the meetings. We provided information about the switchover and how it would effect the households in their municipalities. It was important to clarify the role of municipalities in terms of their responsibility for providing information as

well as how they could use their own information channels to reach residents and the local media. The parties responsible for municipal property also needed a basis for taking inventory and planning conversion work on municipal property and within healthcare institutions. In addition to members of municipal management and information supervisors, efforts were also made to ensure that other relevant municipal employees such as switchboard operators were able to respond to basic questions.

In order to facilitate municipal information dissemination, brochures and posters were distributed to municipal libraries and consumer guidance advisors.

In collaboration with the Swedish Consumer Agency, we also offered a basic course for local consumer guidance advisors. In addition to providing information, they were to provide continuous progress reports for their own municipalities.

In spring 2005, a memorandum of understanding was signed by the Commission and all of the municipalities included in phase 1; the “Memorandum of Understanding” used during the Berlin switchover served as inspiration. The aim was to clarify division of roles, responsibility and tasks. The memorandum of understanding resembled a checklist of what the municipality needed to consider and do for the switchover to progress smoothly. From phase 2 onwards, municipalities

also received information as downloadable micro websites³⁴, in addition to a guide on our website explaining how to provide information.

Collaboration with the municipalities was of decisive importance for the entire digital TV project, primarily in terms of preparing for the conversion in municipal buildings – in particular for elderly sheltered housing.

Meeting with property owners

Residents living in buildings with MATV (Master antenna TV networks) were generally not aware of how they received TV, even though they were affected by the digital TV switchover. Thus, the Commission initiated a meeting with the Swedish Property Federation in May 2005. The meeting dealt with how the organisation could communicate information and guidelines to its members. The meeting resulted in an agreement for collaboration on various information initiatives. Not withstanding clear guidelines regarding the Swedish Property Federation’s attitude to the switchover did not emerge until 2006.

The initial meeting that was held during phase 1, however, created a platform for how we and the Federation could jointly communicate clear information to members about the switchover and must-carry regulations. Our role was not to interpret or recommend, but we could simplify information searches by providing clear links to the Radio and TV Authority’s website and provide the Authority’s

³⁴. Micro websites are a reflection of the Digital TV Commission’s website that is updated on a continuous basis by the Commission, but which is published externally.

recommendations in our contact with consumers. Resistance to the necessity of installing new equipment was great among some property owners. This resulted in legislation being clearly interpreted in 2005: property owners are obligated to ensure that their MATV can receive digital signals. However, they are not obligated to convert digital signals to analogue signals. In many cases, this resulted in tenants being directly affected by the digital TV switchover and having to acquire a digital receiver of their own.

Gaining support from the industry

By autumn 2004, we had already established contact with ElektronikBranschen (the Swedish trade association of suppliers and retailers of electronic goods) and CANT (The Swedish trade association of antenna- and cable-TV business) in order to gain better insight into the world of retailers and installation engineers and to gain an idea of product offerings. The information exchange entailed ongoing follow-up of new products that could be expected to enter the market and the number of available set-top boxes already on the market. It also aimed to ensure that there were a sufficient number of set-top boxes and other equipment in each area.

After meeting with us, CANT encouraged its members to ensure that installation engineers obtained the level of expertise (*“Antenn 2” expertise*) needed to install digital TV equipment in multiple households. Installation engineers demonstrated very little interest in the training, however, and there was concern that there would not be a sufficient number of qualified engineers in each area. The Commission,

ElektronikBranschen, Teracom, SVT and CANT met in a special meeting to address installation engineer availability. The parties agreed that collaboration might be necessary to ensure that local installation engineers were reinforced by visiting colleagues.

MTG begins coding TV3, TV8 and ZTV again

The digital TV switchover experienced a set-back when the broadcaster MTG began encrypting its channels on the terrestrial network again in autumn 2004 (*TV3, TV8 and ZTV*) after having broadcast them as freeview channels for a couple of months. MTG is also the owner of the satellite pay-TV-operator Viasat. The measure was a direct reaction to Viasat’s competitor Canal Digital’s combination set-top box that enabled reception both of terrestrial freeview broadcasts and Canal Digital’s satellite broadcasts. The combination set-top box gave customers access to the “Big Five”, the five major channels, which had previously not been possible with satellite reception. The decision meant that households were much less likely to opt for digital reception on the terrestrial network, which entailed a new communication challenge.

Confused consumers

Basically all of the commercial players actively marketed their digital TV products at an early stage. Pay-per-view and video on demand are two services that were primarily marketed as part of the digital TV offering. At the same time, general knowledge of digital TV and the various related concepts was still low. There were reports at the beginning of 2005 of consumers having purchased DTT receivers even though they lived

in a cable household, for example. In compliance with the Swedish Consumer Sales Act, these customers were entitled to return the DTT receiver, but they were unable to release themselves from binding subscriptions with fixed terms.

This resulted in the Swedish Consumer Agency producing a checklist for consumer guidance advisors. The checklist was criticised for being too focused on TV reception via the terrestrial network, but the Swedish Consumer Agency determined that it fulfilled its function for the group for which it was intended, and thus left the text unmodified.

Meetings with retailers

The problem of erroneous information from retailers was a longstanding challenge for two reasons: pure lack of knowledge on the part of merchants, and salespersons who did not clearly communicate the various options available to TV viewers.

As an extension to the dialogue that had been established with ElektronikBranschen and CANT, we decided to organise local retailer meetings about six months before each switchover. The aim of the meetings was for merchants to feel that they were part of the process and possessed a sufficient level of knowledge so they could provide their customers with correct, modulated and factual information. An initial challenge involved communicating that there was a free offering available, and that digitalisation did not necessitate a subscription. Issues related to freeview TV became more important to the Commission. The message was that retailers should consider set-top boxes without a subscription as

entry-level products. It was important to simplify the process and reduce resistance on the part of sceptics.

Several meetings with retailers were held on Gotland and in Gävle and Motala during spring 2005. The retailer meetings also enabled us to conduct questionnaires on offerings and demand. The questionnaires also offered the chance to receive feedback and prepare any additional information initiatives that were needed for retailers and consumers. Initiatives of this type, however, proved unnecessary. Nevertheless, the retailer questionnaires were useful to provide continuous input to gain media coverage of the situation in retail shops.

Supplier meetings

At the same time that meetings with retailers and installation engineers were being held during the initial stages, it was also important to ensure a constructive dialogue higher up in the hierarchy with suppliers of digital receivers and other equipment. A small initial supplier meeting was organised on 13 April 2005. Representatives from Pioneer, Philips, Sony and Sagem were some of the participants. The industry clearly expressed a need for a Government decision regarding the remainder of the switchover plan.

The small supplier meetings were followed up by a larger supplier meeting on 15 June 2006; retailers and installation engineers were also invited to this meeting. Several of the players present at the meeting expressed a great deal of scepticism to the digital TV switchover. Once again, the majority

expressed a desire for a Government decision regarding the remainder of the switchover plan. Many believed that there would be opportunities for retailers and suppliers to plan long-term as soon as the entire plan was complete, which would better help them further the switchover process. This desire was in contrast to the Government's wish to have confirmation from suppliers and retailers that the market was ready for the switchover by providing clear offerings.

Quality-assurance test for consumers

The Commission believed that improved quality assurance would help increase the offering of digital TV receivers as well as reduce uncertainty on the part of consumers. In light of this, we initiated a joint meeting with Teracom, the Swedish Consumer Agency and ElektronikBranschen. The challenge involved finding a model to test set-top boxes for freeview TV on the terrestrial network; that is, set-top boxes that were sold without being linked to a subscription or operator.

Neither Teracom nor the Swedish Consumer Agency was willing to take responsibility for giving their stamp of approval for the products. The undertaking was perceived as being too extensive. How testing should be financed was also a point of disagreement. Since the Commission's budget could not accommodate investment of the scope required, early test plans were put on hold. A pragmatic solution involved expanding our media coverage and referring to our website for information about tests that had been performed by independent players.

However, we – and the Swedish Minister for Culture Leif Pagrotsky – continued to emphasise the issue of set-top boxes. Before the supplier meeting on 15 June 2005, Teracom launched a technically simplified set-top box test that was offered free of charge until September 2005. After this date, the test would cost SEK 100,000 which was significantly less expensive than the more extensive test that Teracom had performed on behalf of the pay-TV operator in the digital terrestrial network, Boxer. The test was intended to contribute to market entry and create prerequisites for good products. At the same meeting, the Minister for Culture extended a “champagne challenge”, which meant that the first producer and/or retailer to offer a tested DTT receiver without a smart card slot for under SEK 500 would be served champagne in a public context. The challenge was happily accepted and diligently reported on by the media.

Concern related to changing aerials

Another issue that arose before the first phase was the number of households that would be forced to switch aerials as a result of the digital TV switchover. This was particularly pertinent on Gotland where Teracom warned that up to 50% of households might need to switch out their aerials. Teracom's research showed that aerials were generally old and that many of them would be unable to cope with the higher frequencies on which digital TV was broadcast.

As a result, Teracom reviewed frequency planning on the terrestrial network; in the original plan, this had initially been planned for a later stage. After its analysis, Teracom decided to

move digital channels on the day of the switchover to the lower frequencies that had been freed up in conjunction with analogue broadcasts being switched off. Frequency changes meant that fewer households than were originally projected had to switch out their aerials. At the same time, frequency changes complicated the switchover, especially for households that would have to reinstall after the frequency change.

On Gotland, only around 15% of households had to change their aerials, compared to the projected 50%. The proportion of households in the country as a whole that have had to switch out their aerials as a result of the switchover has remained at around 7%, and the need for installation engineer services has been slightly less than anticipated. Locally, however, existing installation engineers have been very busy before each switchover. Since many households have opted to wait until the last second, a few of them have gone without TV for a few days after the switchover.

Information to consumers with special needs

During the analysis and strategy phase in 2004, the Commission was only able to provide very basic information to consumers with special needs as a result of very limited resources and time. A fact sheet in easy-to-read Swedish and the nine most common immigrant languages was available on our website prior to phase 1. It was clear as early as the analysis phase that consumers with special needs required solutions and aids that fell outside the scope of the Commission's assignment. However, we considered communicating with relevant organisations and

contributing to the exchange of information for the special needs that arose due to digitalisation as part of our assignment.

We sent the matter for consultation to all of the organisations that represent consumers with special needs in summer 2005. It was addressed to organisations that represent disabled persons, the elderly and immigrants. Based on the responses, it was clear that existing needs concerned information – gaining easy access to information in the consumer's own language. In addition to the need for information, organisations representing disabled persons also requested specific technical solutions and product development. We subsequently initiated a workshop to accelerate product development.
(See Appendix 8)

Information to public opinion makers

The digital TV switchover was politically charged throughout 2004 and 2005, which was regularly reflected in reports from the media. As a result, we carried out a number of information initiatives aimed at politicians and other public opinion makers in spring and summer 2005. During Almedalsveckan (“the political week in Almedalen”) which is held at the beginning of July on Gotland, several meetings were held with politicians and representatives of special interest organisations that had previously expressed concern or resistance to the switchover. We met with representatives of most of the political parties, the Swedish Union of Tenants, the Swedish Association of the Visually Impaired, the Swedish National Pensioners' Organisation (PRO), the Swedish Association

for Senior Citizens (SPF) and the Swedish Consumers Association. We met with members of the Riksdag and with municipal politicians from the regions next in line to be digitalised. These individuals were significant in their role as informant to residents in their municipalities. It was important that they received first-hand information about the switchover and that they planned information dissemination measures to prevent negative attitudes from arising due to deficient information.

Information to the elderly

Elderly consumers constituted the group that many predicted would be hit the hardest by the switchover. Elderly citizens were predicted to be those who experienced the most difficulty in terms of receiving information and acquiring and coping with the appropriate equipment. During the first phase, dialogue and debate with both of

the Swedish organisations that represent the elderly, PRO and SPF, were often charged. However, as a result of constructive collaboration, we trained all of PRO's consumer supervisors in February 2006. The course offered know-how and information material that allowed them to provide information locally. Prior to the switchover on Gotland in 2005, PRO, with around 400,000 members, launched a member offer in collaboration with the OnOff home electronics chain. The initiative aimed to help meet the needs of its members. The offer included a tested DTT receiver with a smart card slot, free installation and a new aerial for SEK 1,500. The offer was not taken advantage of to any great extent, but the collaboration was important; awareness that a tailored solution was available helped alleviate a great deal of the initial concern. The elderly never distinguished themselves as a group that experi-

enced problems with the switchovers; rather, just the opposite was true. Our surveys show that the elderly received requisite information well in advance and managed to resolve their TV viewing satisfactorily as a whole. However, many viewers in the elderly group have indicated problems related to double remote controls and settings via the digital receiver's menu.

Platform neutrality and EU review

Our relationship with SES Sirius, Canal Digital and Viasat, all of which are satellite companies, became increasingly strained over spring 2005. The initial discussions related to the Digital TV Commission's platform neutrality gained new impetus in conjunction with our presentation of planned information initiatives for other operators on 15 April 2005. The presentation aimed to elucidate our initiatives and clearly justify them, create the necessary prerequisites for open dialogue with all of the relevant parties and promote synergies.

Reactions from the satellite operators were immediate. On the same day as the presentation, representatives of Viasat and Canal Digital, two satellite pay-TV operators, and Bredbandsbolaget, a broadband operator appeared on Aktuellt, SVT's primetime news programme. They criticised our information material as solely promoting the terrestrial network, and thus Boxer the only pay-TV operator in the terrestrial network. We were not given the opportunity to counter the criticism, but we realised that the appearance resulted in a great deal of attention and helped promote information dissemination. One of our public relations officers appeared live on SVT Debatt from

Gotland the next day, and was able to comment upon and counter inaccurate information from the previous day. The Digital TV Commission's attitude has consistently been that information dissemination must be based on the terms of reference that the Government has issued for the Commission. These are focused on the changes that arise due to the terrestrial network being digitalised.

Criticism from operators has been immediate on those occasions the Digital TV Commission has made statements that could be interpreted in Boxer's favour. The Swedish information campaign was also scrutinised by the European Commission as a result of complaints that were forwarded by NSAB (*currently SES SIRIUS*) in 2006. NSAB believed that the Swedish Government had breached the EC Treaty by granting illicit Government aid to Teracom in conjunction with developing the platform for terrestrial digital TV in Sweden. The complaint stated that Teracom had received direct and indirect financial support from the Swedish Government via the public service broadcasters SVT and UR. The complaint cited unfair competitive advantage for digital terrestrial broadcasts compared to other distribution platforms.

However, the EU Commission did not find that the Government's measures related to the digital terrestrial switchover constituted Government aid. Neither did the EU Commission direct any criticism to the Digital TV Commission's information dissemination activities.

What is your general opinion about the switchover to digital TV?



The oldest age group is as satisfied as other age groups with the information they received and their TV reception. There is a clear trend that the elderly successfully searched for and received information and were therefore possibly even more prepared.

External information dissemination

Launching the digital TV switchover

Dialogue and meetings with municipalities, the industry and politicians were important in preparing for the switchover, but our primary task involved informing and preparing Swedish households for the switchover.

In April 2005, six months before the first switchover date, the terrestrial network switchover was a hot issue, and there was a great deal of general concern. The planned initiation for the phase 1 information campaign was scheduled for May to ensure it did not get off the ground too far in advance of

the switchover. However, considering the information vacuum and widespread concern that already existed at the beginning of 2005, we decided to push the information campaign forward as much as possible. On Saturday, 16 April 2005, basic information brochures about digital TV landed in the letterboxes of 200,000 households on Gotland and the areas included in the switchover in Gävle and Motala.

The informational campaign before the switchover

Time plan	9 months before	6 months before	3 months before	Switchover day	2 mos. after switchover
Objective	Awaken	Inform	Activate	Follow-up	Follow-up
Target group	Municipality Media	Retailers Citizens Media	Citizens Media	Citizens Municipality Media	Industry Government Internal
Activity	Meeting with municipalities USB/distributor material Good examples Carrot-Whip	Informational brochure Advertising Consumer advice Meetings with retailers Retailer surveys Meetings with property owners	Postcard/reminder Advertising Citizen meeting/info bus Question/answer column in local press Telephone support in local radio	"Push a button" Info point for citizens SMS service, installation companies Support/interviews Follow-up with the municipality	Report Media Press releases Newsletters
Other activities	Opinion building/lobbying		Quant. opinions and reception Effect measurement info campaign	Reference families Awareness and reception	Quant. opinions and reception

Because there were low awareness levels in both households and affected municipalities, it was important to inform both about the upcoming change at an early stage. The number of more targeted campaigns then increased over time and culminated during the weeks leading up to the actual switchover day.

The pink brochure

The public awareness surveys we performed over the spring and summer prior to the switchover indicated that public awareness had steadily increased, and that it was close to 90% in May 2005 on Gotland and in Gävle and Motala, the first switchover areas. The surveys aimed to do more than just provide ongoing status reports. The media was also very interested in how awareness in each of the areas was developing, and results from the surveys served as the basis for ongoing PR initiatives for the switchover.

One foundation of the information campaign consisted of a 12-page pink information brochure. The brochure was sent to all households regardless of how they received TV signals about six months in advance of switchover day. The point of time to send the brochure was chosen to ensure the recipient had ample time to read and understand the information, but not enough time to forget to take action. The pink brochure contained basic information about digitalisation and did not attempt to answer all the questions that might arise. The objective was for the recipient to understand whether his or her household would be affected by the switchover as well as be able to take the necessary steps to ensure TV viewing. Many players had strong opinions regarding content – facts, formulation and images were adapted prior to each phase and edition. Basic information, though, was constant; the final edition of the brochure was written along the same lines as the first one.

The version that was sent to households for

phase 1 emphasised the background to and arguments for the switchover (“why?”), while subsequent versions focused more on what viewers needed to consider and what the various options for resolving TV viewing were (“how?”). The change in tone was the result of increased household awareness and understanding of the switchover that accompanied each phase.

Each phase was geographically defined by transmitter site coverage in each of the areas. The concept of “transmitter geography” was coined. This means that all the households that could in theory receive TV signals from the transmitter site must be informed. The Swedish terrestrial TV network consists of 54 main transmitter sites. It is impossible to say with complete certainty from which site specific households receive broadcasts in coverage areas in which two adjacent sites converge. In consultation with Teracom, we decided to overlap information dissemination. This meant, for example, that households in Tierp were informed before the switchover in Gävle, even though Tierp belongs to Uppsala in terms of transmitter area.

According to Statistics Sweden’s (SCB) municipal calculations, there would be just over 150,000 households included in phase 1. Teracom estimated that 200,000 households would be affected when the first three transmitter sites on Gotland and in Gävle and Motala made the switch to digital broadcasts. As a result, these households received the Digital TV Commission’s information brochure in April 2006, six months prior to the switchover. The mailing was sent as unaddressed

advertising, but since our work was defined as civic information, the brochure was also distributed to households which otherwise declined un-addressed advertising. The cost for postage to all of the households in Sweden had been assessed as unreasonable in relation to the information dissemination budget.

Prior to phase 1, the Commission and Teracom agreed to coordinate information dissemination to increase the amount of exposure for switchover information. We agreed to use the same address directory for mailings. This meant that households that received our information also received Teracom's technical information brochure. The mailings themselves were coordinated to optimise the amount of exposure and to prevent competition for attention.

Whole-page pink advertisements in the local press with the headline "Poof - Blank Screen" called attention to our mailing. Our public relations officers also held press conferences in the main areas included in phase 1 to talk about the campaign a few days prior to the mailing. The aim was to distribute as much information as possible about the switchover and the campaign. We also hoped the press would use the images of the pink envelope that were included in the press material. In theory, households would receive information about the digital TV switchover from three different sources on three different occasions over one single weekend: advertising, editorial text and the mailing. We launched our assistance telephone service and website at the same time.

The media penetration was on the whole immense. The silence that ensued a few days after the start of the campaign confirmed our hypothesis that it was the perceived lack of information that had caused the previous concern.

Households also received a postcard as a reminder about a month prior to switchover day. The postcard was intended to function as a wake-up call for viewers who had failed to act. Its only message was "Is your TV ready?". This was particularly relevant as the switchover day was scheduled right after the summer holiday and the brochure had been sent before the summer began.

Advertising and film

Advertising in the local press that supplemented the directed mailings was an important element of the advertising campaign aimed at households. Advertisements in Gotlands Allehanda and Gotlands Tidningar aimed to call attention to the brochure and postcard, which might otherwise get lost in the abundance of advertising households generally receive. The advertisements were timed to appear so they supported the information brochure that was distributed six months prior to the switchover and in conjunction with the postcard that was distributed a little less than a month before the switchover. They also called attention to information in general and the switchover day. The pink design also appeared on the Gotland ferry and in a couple of local advertising flyers. We initiated collaboration with Teracom to optimise the impact of advertising. Better discounts and coordination resulted in more scope and increased impact.

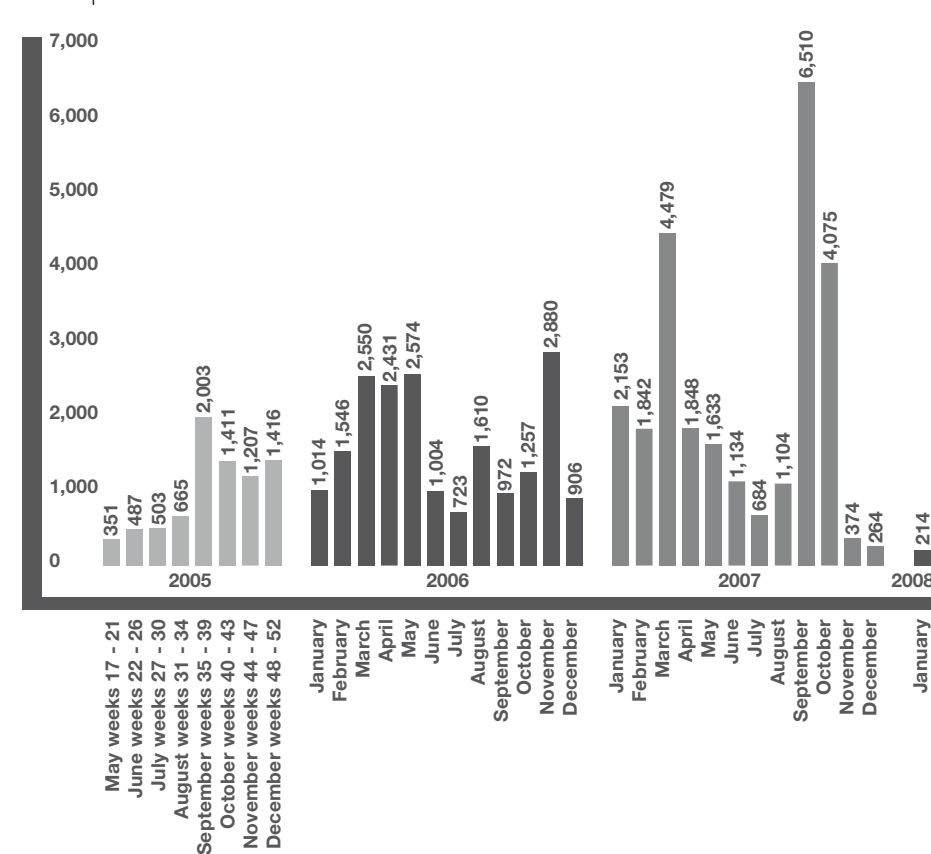
Television was an obvious priority since it was the medium affected by the switchover. TV time is expensive though. We produced information clips that adhered to the overall strategy and expected SVT and TV4 to air them. After discussing format and tone, 15-second information clips resulted. TV4 aired these locally as early as for the

first switchover. SVT opted to produce its own information films.

The Commission's website

The website that was launched prior to the first phase was very simple. It was revised in spring 2006 to satisfy a need for more in-depth informa-

Calls per month



The Help telephone has received on average 100 calls per day, which was significantly lower than the original estimates. The clear peaks correspond to the release of informational brochures and advertising campaigns and to each switchover day.

tion and to provide references to other players with similar information. The website was also the only tool included in the information campaign that could be adapted to languages other than Swedish and to accommodate easy-to-read Swedish and enlarged text. The website gradually evolved into a platform from which we reported our own information as well as what was going on outside Sweden.

Assistance telephone service

From the start, we were convinced that an assistance telephone was needed to supplement our other measures. We were convinced of the psychological importance of knowing that help was available even as the viewer sat in front of his or her television set. The need was probably real, but the measure also aimed to send a clear signal that the Government was taking its responsibility. The service began receiving its first calls in the middle of April 2005, at the same time that the information brochure was being distributed to phase 1 households and the website was made available to the general public. The cost of the call was the same as for a local call, and opening hours were weekdays 8:00 a.m.-10:00 p.m., and weekends 10:00 a.m.-6:00 p.m. The service was supplied by an established call centre in Östersund. Agents (individuals who respond to calls) have been trained on an ongoing basis to keep them updated on digital TV and the switchover.

In June 2005, after criticism from satellite pay-TV operators Viasat and Canal Digital, we decided to review the structure and content of the service as well as the content of recorded responses. A new structure was sent for comment to all of the major

platform operators, and it was tested on a number of consumers. Based on the viewpoints that emerged, additional adjustments were made before the updated telephone service was launched in August 2005.

Overall, the number of calls has been significantly lower than expected, but the telephone service has offered an important information channel for responding to questions and providing information. On switchover days, calls basically corresponded to 1% of the households in the relevant phase, and the number of calls was an average of 100/day on non-switchover days. The maximum number of calls on switchover days was 1,000/day. Most of the questions were of the character "Will I be affected?" or "How do I connect my set-top box?".

Local presence – information tours

A great deal of strategy formulation and analysis had to be done from the Commission's base in Stockholm. Since the switchovers were local events, though, different parts of the country had to be visited to the extent permitted by time and resources. The structure for local presence was developed before the switchover on Gotland. The same structure was used in a modified form during the course of the entire switchover. In order to meet with the general public on site and deal with any final questions before the switchover, we announced our local presence together with Teracom, SVT and TV4 a few days before the switchover day on 19 September. The slogan was "Come ask about digital TV". A few simple folding tables were set up on the pedestrian walkway in downtown Visby, the largest city on

the island of Gotland. Flyers, maps of reception possibilities on Gotland and a number of digital receivers helped sort out the last few areas of uncertainty. National media coverage during the final weeks before the switchover indicated total ignorance in terms of the switchover and a doomsday prophesy mood prevailed. It was, however, clear that the media's view of the situation was incorrect. People felt like information was on the verge of being overabundant, and questions were of a very practical nature.

Questions from an estimated 500 Gotland residents were responded to over the weekend before the switchover. Actual penetration, though, was far greater. In addition to general media coverage, we took part in phone-ins on the radio and studio discussions on local TV and responded to questions from readers in the local papers. This structure was intended to optimise local media coverage to ensure it became a central element of the continued information campaign.

The information tour on Gotland clarified that media interest intensified if the Commission and other players were on site to meet with the general public. The tour was also able to communicate a certain amount of humbleness in the face of the assignment. We were not an anonymous authority that simply disseminated information from the capital city; rather, we were a number of individuals who were willing to take the time to respond to TV viewers' questions directly on the spot. Our local presence, thus, was not only important from the point of view of information, it also played an important role for the Commis-

sion's and entire switchover's trademark, especially in terms of the media.

The information tour on Gotland a few days prior to the switchover was subsequently repeated in Gävle and Motala with the same positive results.

Dialogue

We systematically worked on our PR and media contacts over the spring and summer to ensure that attention was focused on the switchover and to eliminate myths and false notions. For example, there were regular media reports on public awareness of the switchover, product availability and what questions TV viewers were asking about digital TV. The working hypothesis was very simple: the more often TV viewers are reminded of the digital TV switchover, the less the risk of them staying uninformed. Criticism had been forwarded all along. One way for the general public to express its opinions was to write letters to the editor in local papers. Our policy was to respond to letters to the editor and debate articles that were based on pure fallacy or that were directly related to the assignment. We did not respond to other players' questions or letters to the editor that concerned political decisions. In these instances, we referred to the appropriate body to address the question, and sometimes also proposed a reply.

It has also been possible to e-mail directly to the secretariat's employees and to a joint e-mail address via our website. Many of the questions directed to digitaltvkommissionen@culture.ministry.se pertain to TV in a much broader perspective. This

is an indication of the difficulty the general public experiences in understanding how decisions and responsibility are related to one another, as well as their uncertainty in knowing where to turn with questions. We have responded to an average of 500 questions a year. They have increasingly pertained to the programming offered by various broadcasters; we have been perceived as a “digital TV agency for consumers”.

Switchover day on Gotland

The Commission’s role on actual switchover days was gradually limited during later phases. The major part of information dissemination was already complete when it was time to switch off analogue broadcasts. Our task was to make ourselves available and deal with any unresolved issues or unplanned incidents. Naturally, the switchover day on Gotland on 19 September was unique. Interest in the switchover was intense, and the general atmosphere was characterised by expectation and nervousness. There was a great deal of pressure on the Commission in its role as hub and central coordinator.

We asked Teracom for an account of emergency preparedness a week before the scheduled switchover. Reports of how switchover work was proceeding on Gotland, an accurate presentation of areas of concern and conceivable emergencies were included in the request. Our focus on households combined with Teracom’s technical perspective provided a modulated view of the situation. Our task included communicative preparedness. We presented a preparedness plan to the Ministry of Culture, our mandator, four

days prior to the switchover. It described

- potential crises
- division of responsibility in the event of an emergency
- questions & answers
- a policy for who should respond to what.

Preparedness plans have subsequently been produced for each phase. Naturally, the number of conceivable crises was greater before the first switchover on Gotland than during subsequent switchovers.

In order to satisfy information needs on the part of the general public and the media on switchover day, an information centre was set up at the Almedal Public Library in downtown Visby, the main city on the isle of Gotland. One of the reasons underlying the information centre was that Teracom’s frequency changes entailed an interruption to broadcasting between 9:45 a.m. and 6:00 p.m., which was expected to cause a great many questions and a certain amount of concern. As an extra measure, the assistance telephone had a direct line to the Almedal Public Library to enable regular communication and direct response to questions from Visby.

Media coverage was intense the entire day. A slew of journalists was on site at the Follingbo transmitter in Visby to cover the first button being pushed, and the media gave progress reports all day long. Broadcasting was resumed according to plan at 6:00 p.m., and a press conference was held shortly thereafter to comment upon the switchover. The Swedish Minister for Culture Leif Pagrotsky and SVT’s CEO Christina Jutterström

took part, which emphasised the interest attached to the first switchover.

Media coverage from the Gotland switchover was contradictory. The local press reported a relatively painless switchover, while the national press adopted a more critical tone. In actual fact, the Gotland switchover progressed much more smoothly than the national press reported. The unfavourable coverage conditions on Gotland, however, provided the media with a sufficient basis to describe the switchover as not altogether successful. Reference families, Teracom’s measurements and quantitative surveys unequivocally indicated that municipal and private property TV viewers were able to watch TV the same evening of the switchover, an aspect that the national media did not seem to consider.

As one aspect of the switchover outline, we held a joint debriefing session the day after the switchover. The aim of debriefing was to evaluate mediacoverage and viewpoint, work performance and implementation with other relevant players. Doing so would help all those involved adjust the switchover outline and their efforts before the Gävle switchover that was scheduled three weeks later.

A switchover outline emerged that would be used for all of the remaining switchovers. It primarily consisted of

- chatting and phone-ins with the local media prior to the switchover
- inventory of potential crises and preparedness plan to the Ministry of Culture

- press tours of transmitter sites and “picture-friendly” shots of the button being pushed at 9:45 a.m.
- open house for the general public and media at a central location between 10:00 a.m. and 6:00 p.m.
- press release at 6:00 p.m. upon completion of the switchover
- direct contact with 50 reference families in conjunction with the switchover
- debriefing and discussion of the lessons to be learned on the day following the switchover.

Switchover in Gävle

As a result of the smooth switchover on Gotland, national media interest in the Gävle switchover on 10 October was less intense. As was the case in Visby, several players including the Commission were on site in Gävle at the city library to meet with the media and respond to questions from the general public. The switchover outline that had emerged on Gotland including presence at the shopping centre, chatting, phone-ins and contact with around fifty reference families was also used in Gävle. Reporting by the local media was extensive, and it was clear that the switchover was now mostly of interest to that level of the media. This trend continued until the Stockholm switchover in March 2007 when the national media began showing renewed interest. The switchover in Gävle progressed according to plan and households were well informed and prepared. There were, though, some questions from viewers who had purchased a subscription from the satellite operator Viasat but who did not have access to TV4 because of an exclusive agreement TV4 had signed with the other

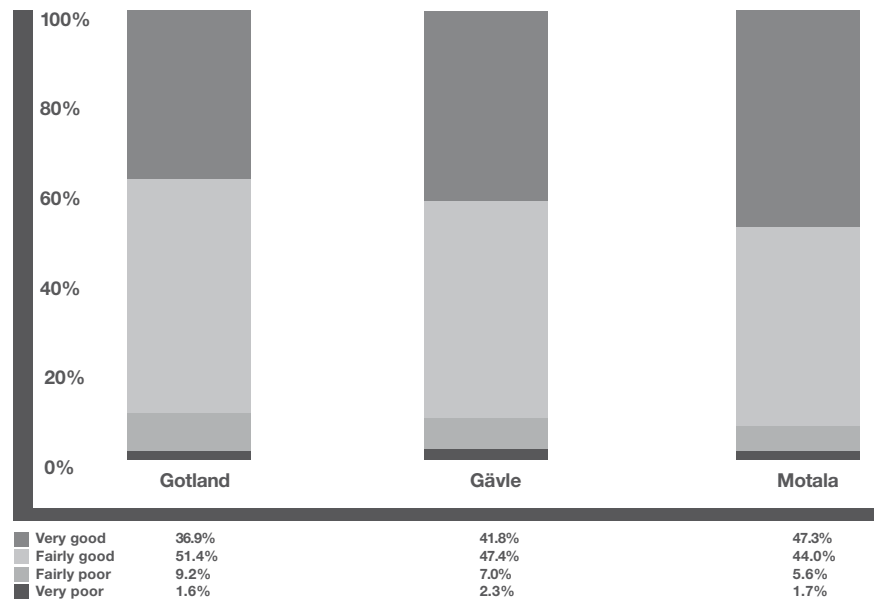
satellite operator Canal Digital. The exclusive agreement expired, however, and TV4 was available both to Viasat and Canal Digital subscribers at the beginning of the following month.

Switchover in Motala

The Motala switchover also progressed smoothly. National interest for the switchover was now basically non-existent. Minister for Culture Leif Pagrotsky announced the winner of the champagne challenge before the switchover in Motala

on 15 June, and his announcement attracted some attention. The producer Emitor and retailer El-Giganten were the winners. Several other producers had also launched set-top boxes that were priced under SEK 500 over the period, but they had not been tested by Teracom. Unfortunately, the set-top box for which Emitor and El-Giganten had been recognised was not widely available, and it was basically impossible to find in shops a few days after the champagne toast. Emitor had launched a similar model with a similar

Everyone with digital terrestrial TV:
How is the quality of your TV reception now?



An absolute majority stated in follow-up surveys that their TV reception was fairly or very good.

name, but it had not been tested and was thus not the real winner.

Phase 1 summary: Smoother than expected

On the whole, phase 1 progressed more smoothly than expected. The energy that had been put into meeting with various industry players and consumer and municipal representatives had given results and created the platform needed to proceed with the switchover effectively. The information model for disseminating information to households had worked well. They had received the information they needed and were able to take action in time.

Our surveys showed that over 80% of households on Gotland and in Gävle and Motala felt they had received sufficient information in conjunction with the switchover, and almost 90% of households believed that TV reception was “very good or fairly good” after the switchover.

Mediavision’s TV tracking of development, combined with the results of the focus groups, provided a good basis for defining issues related to attitude, knowledge and behaviour in households. A benchmark measurement that was performed in 2004 provided the basis for future measurements. The phase measurements were a good tool for keeping track of information dissemination efforts and platform development. (See *compilation of surveys*.)

We were able to ascertain that most of the households that used a regular aerial before the switchover opted to keep terrestrial reception

even after the switchover. Around 40% of the households that opted to keep service on the terrestrial network in phase 1 purchased a set-top box without a smart card slot, meaning it was not linked to a subscription. In contrast to general expectation, 60% of terrestrial viewers chose pay television. This trend continued throughout all the phases. Distribution among the different platforms remained basically unchanged. The main difference was that viewers who had previously had analogue terrestrial reception switched to digital terrestrial TV.

Digitalisation of the cable network did not follow the same pattern. Despite Com Hem’s marketing of Triple Play, for example, only about 15% of cable households switched over to digital broadcasts. (*Mediavision’s estimate Q4 2005*.)

We ascertained that the number of households that switched to digital in 2005 was greater than the number impacted by phase 1. Close to 200,000 households, in addition to the just over 50,000 in phase 1 that risked losing reception, acquired terrestrial digital TV in 2005. Media attention resulted in many households taking action far in advance of “*their*” phase. This was a positive development since a continuation of the trend would indicate that switchover efforts had reached critical mass. By the end of 2005, awareness and know-how were on a level that enabled information to be of a much more action-oriented nature. The digital TV switchover could leave “*why?*” and focus on “*how?*”.

Phase 2 – Switchover outline and method established

Copy and paste what had worked

114 Planning and implementation of phase 2 was primarily shaped by the successful first phase. It was clear that the analysis phase had offered an accurate basis and that information initiatives had functioned well. Households felt like they had received a sufficient amount of information, and they acted in time. The model that had been developed in phase 1 would be used again. The information campaign thus followed the guidelines and schedule that had been used in phase 1 – meetings early on with the affected municipalities, retailers and suppliers combined with the information brochure, reminder postcard, reinforced advertising and local presence to enable meetings with the general public. We maintained our open attitude in terms of sharing survey results and communicating how information would be disseminated in phase 2. Dialogue was established with industry players, and the need for planning meetings was reduced.

Higher level of awareness and less controversy

General awareness of digital TV in phase 2 was comparatively high even before the information campaign got off the ground. The switchover was less polarised and less frequently called into question. We were able to work in a more focused manner with a greater degree of self-confidence.

Some modifications

Even if a great deal from phase 1 could be used again, the prerequisites for phase 2 were different. Instead of three small areas and a relatively small number of households, the areas were much larger in terms of both geography and population. Phase 2 consisted of three sub-phases:

- Östergötland and parts of Södermanland; switchover date 27 February
- Uppsala, Örebro and Västmanland; 3 April
- Dalarna and the rest of Gävleborg County; 2 May.

Phase 2 comprised a total of almost 1 million households (*just over 20% of all Swedish households*) compared to the 200,000 households that were included in phase 1. The difference in scope and geographic distribution meant that we had to optimise efficiency of information as well as find a way to optimise available resources.

Geographic concentration

The scope of phase 2 did not entail any changes to the information that was aimed at affected municipalities or retailers. Information to households, though, needed to be adjusted. Due to lack of resources and time, the same amount of attention that Gotland, Gävle and Motala received

in phase 1 could not be repeated in phase 2. The same level of local presence was quite simply not possible. Information tours were instead concentrated to a number of central locations that would have the greatest media impact. There was, though, a clear risk of certain areas feeling like they were not receiving the treatment they deserved. However, the municipalities that the information tour did not cover fell under the local media coverage area of the municipalities that were visited. Reports, reader query columns and phone-ins achieved increased distribution and justified the prioritisation.

Early information tours

In order to cope with the new geographical prerequisites, we decided to transfer the focus of information dissemination from the actual switchover day to the weeks immediately leading up to it. Two aspects underlying this decision were that level of awareness was over 90% and that the first three switchovers had gone so smoothly. It was also clear that the hesitant households were making an active decision to wait until the last second. A natural evolution was for Teracom, being technically responsible for shutting off the analogue network, to take on primary responsibility for information activities on switchover day.

Since we were unable to monitor development in individual areas as closely as we had in phase 1, we were not able to provide the same type of tailored information. This meant that the media's role was even more important. The tours, or “digital TV days”, that were implemented the weekend immediately prior to the switchover day in phase 1, were

moved to 3-4 weeks before the switchover day instead. This decision remained unchanged for subsequent switchovers. The aim was to inspire media coverage at an earlier stage and to provide information about how households should prepare. Information tours, reader query columns and phone-ins were pushed up, which gave households more time to organise practical details. Moving the information tours up also enabled us to intercept local problems and discover any areas that required extra information.

Heavy-going dialogue with municipalities

115 Just as was the case in phase 1, information dissemination for phase 2 was initiated by meetings with municipal representatives. Since much larger areas were involved, all of the impacted municipalities were invited to an introductory general meeting. The first general meeting was held on 27 October 2005 at the Stockholm International Fair. The aim was to provide a checklist that the municipalities could use before the switchover as well as provide a basis for planning timely conversion work at municipal properties. Only 39 of the impacted 62 municipalities attended the meeting.

Many of the municipalities included in phase 2 were initially sceptical to the work they anticipated would be required of them for the switchover. As opposed to the municipalities in phase 1, none of the municipalities included in subsequent phases volunteered for the switchover or were even asked if wanted to take part. They felt like they were being assigned responsibility without being asked. There was concern about runaway costs, and what the switchover actually en-

tailed. Our aim, thus, was to clarify that the actual work required of municipalities was relatively limited, but that unprepared municipalities would experience a great amount of difficulty in conjunction with the switchover. During phase 1, a review of municipal responsibility and roles showed that technical equipment and installation services often needed to be procured. This process required a couple of months to complete and was one reason for beginning work early.

The greatest difference when speaking to municipalities in phase 2 was that it was possible to discuss concrete experiences. Gotland, Gävle and Motala had all helped shape the switchover. Their representatives were able to speak about opportunities and areas of difficulty as well as offer hints for successful switchover work from their own perspectives.

Follow-up meetings with municipalities

As a consequence of poor attendance at the first general meeting in Stockholm on 27 October, ten regional municipal meetings were organised to include the municipalities that had not attended the original meeting. The regional meetings were held in the cities Uppsala, Västerås, Eskilstuna, Örebro, Norrtälje, Hudiksvall, Bollnäs, Borlänge, Falun and Mora. Of those that were invited, 50-70% attended. It was difficult to convince the municipalities to prioritise these meetings for various reasons. One primary reason was that the digital TV switchover was still perceived as a distant matter. Several of the municipalities did not understand the importance of getting involved at an early stage until after repeated contact with the Commission.

Even if the municipalities in phase 2 were generally less involved than the municipalities in phase 1, some of them were even more active. Linköping Municipality, for example, organised a digital TV exhibition at the city library in collaboration with the local daily newspaper, and it hosted meetings with local TV merchants. Another example is Emmaboda Municipality that hosted its own local digital TV day.

Even if the municipalities initially adopted a more passive role in terms of disseminating information than we had expected, they all managed to perform the necessary conversions in time. Our information dissemination was even more focused on mobilising informants from phase 2 and beyond. For example, special information material was produced at the same rate that consumer guidance advisors and retirement organisations were learning more and becoming more involved.

Difficult industry

Dialogue with the radio and TV industry continued, retailer meetings were held and questionnaires were completed in each of the regions. As before, the aim was to gather retailers and installation engineers to ensure they possessed sufficient and accurate information before the switchover. In addition to the Commission, Teracom, SVT and TV4 participated to show a unified front. Information about broadcaster initiatives and technical information regarding local transmitter sites and frequency changes were just as important as more comprehensive information.

As a consequence of the large geographical area, nine separate retailer meetings were organised in phase 2. The first one was held in Uppsala on 17 January 2006. The remaining meetings were held in the cities Västerås, Örebro, Bollnäs, Hudiksvall, Falun and Mora between 18 January and 19 February 2006. However, an evaluation of the meetings indicated that attendance was not sufficient. Some of the meetings had to be cancelled due to too few attendees. Interest was not on the same level as in phase 1, and it was clear early on that the organisation of meetings would have to be modified. There was a risk that the prevailing sense of calm did not accurately reflect the level of retailer preparedness. Not being prepared would lead to problems for phase 2 consumers and merchants that could have been avoided.

We realised during the course of the retailer meetings, however, that the prerequisites for implementing the digital TV switchover had vastly improved. The range of products had begun to grow, and additional solutions were more commonly available – everything from simple digital TV receivers without a smart card slot to digital TV receivers with twin tuners and a hard disk. Consumers were clearly aware of the digital TV switchover as well as what was expected of them in terms of adapting TV equipment. Awareness of the various available options had also clearly improved. There also appeared to be a sufficient number of digital TV receivers available, even if individual models might get sold out.

Information to households

Information dissemination directed to households

followed the same pattern that had been developed in phase 1. All of the phase 2 households received a pink information brochure in their letterboxes the first weekend in December 2005. The brochure had been slightly modified; for example, the available technical platforms were more clearly presented. Otherwise, content and design were much like the first version. Basic information was the same, and the brochure was recognised by many viewers, especially residents of the municipalities bordering phase 1 municipalities.

The reminder postcard was sent to 1 million households a few weeks prior to switchover day to reinforce the brochure. We launched our new website in December 2005, at the same time as the brochure was sent. The new version contained more information about solutions, link libraries, connection schedules and dynamic news functions. The website was created to help improve the hub to which information dissemination could relate.

Advertising in the local press also followed the previous pattern. It was coordinated with Teracom's advertising, and aimed to call attention to our information activities.

A need for new activities to call the general public's attention to the switchover arose before phase 2 (*spring 2006*). The Commission's media agency proposed a previously untested media solution: placing an almost three-metre tall billboard in unusual and conspicuous locations. The idea was for the unusual solution to arouse public interest, and the hope was that the local press

would report on the unexpected addition to the townscape. The billboards functioned as an extra measure and were very visibly placed in medium sized cities such as Västerås and Uppsala.

Widespread tour programme

The tour concept that was used for the rest of the switchover was developed in phase 2. Under the heading of “Digital TV Day”, we visited shopping centres in strategically located areas together with SVT, TV4 and Teracom. There was already a structure in place prior to phase 2 for locating suitable, well-frequented locations and distributing responsibility. A central strategy involved actively inviting consumers to participate in phone-ins at local radio stations and TV channels, as well as responding to reader questions via the local papers during those days when we and the other players were already on site.

We visited Norrköping, Uppsala, Västerås, Örebro, Mora, Borlänge, Hudiksvall, Söderhamn and Bollnäs. The tour resulted in comprehensive media coverage in all of the areas. Media coverage was not limited to calling attention to the tour, it also emphasised important consumer issues. With the assistance of media, we were able to communicate detailed information about issues that were not possible to address in the brochure or via advertising. Questions related to local coverage problems, connections that allow simultaneous recording via the receiver and regional news broadcasts became increasingly common. A new element of the digital TV days in phase 2 was that pay-TV operators such as Canal Digital, Viasat and Boxer were invited to take part. The

players had expressed a willingness to take part in the information tour, and their participation was deemed positive since the general public’s awareness of digital TV had increased to the extent that questions were more focused on alternative solutions. One condition we set for the commercial players’ participation was that they only provide information. They were not allowed to market their services.

Phase 2 summary: Completely according to plan

As opposed to phase 1 and specifically Gotland, actual phase 2 switchover days were relatively non-dramatic. They progressed smoothly from a technical point of view. Teracom was finished with the conversions as early as noon in several cases, which left the company with a comfortable margin before the formal 6:00 p.m. completion time. The need for information was thus reduced to a minimum on the actual switchover days.

If phase 1 progressed more smoothly than expected, phase 2 can be characterised as having gone entirely according to plan. Calls to our assistance telephone service on switchover days were fewer than expected, just around 1% of the affected households. Just as in phase 1, questions were generally of a concrete nature and concerned installation problems that could easily be rectified. Over 80% of households felt they had been sufficiently informed, and the reference families that were interviewed in conjunction with the switchover reported good reception. Consumers were also well informed about the different products that were available. Very few

consumers selected untested digital TV receivers, and most who chose a solution for the terrestrial network purchased a digital TV receiver with a smart card slot.

Phase 3 – An interlude

Riksdag election 2006

When planning the phases, a great deal of emphasis was placed on the Riksdag election that was to be held in September 2006. Since the question was politically charged, everyone involved wanted to avoid turning the digital TV switchover into an election issue. Information dissemination would also probably become much more difficult if the switchover were scheduled too close to the election. There was a risk of information quite simply getting lost. As a result, it was decided that all of phase 3 would be carried out on one single day, 6 November 2006, which was at a comfortable distance from election day.

Phase 3 included the regions Öland, Småland, Halland, large parts of Västra Götaland and part of northern Skåne. The switchover comprised almost 750,000 households, and geographically, it was the largest switchover to be implemented on one single day.

Awareness of the switchover continued to increase throughout the country, and had almost reached the 100% mark according to statistical measurements. The issue was basically non-existent politically, which was just the opposite of early predictions when the implementation plan was first established. The non-socialist alliance, which

had previously indicated the switchover might become an election issue, announced that it did not intend to pursue the matter. The switchover had experienced a certain amount of momentum before the election when the first two phases were carried out without any great difficulty, and it was not believed that any advantage could be gained by reversing the decision. This was also confirmed at the meetings we had during the political week in Almedal in July 2006.

Continued focus

From the point of view of information, phase 3 was considered a continuation of phase 2. The campaign was basically the same even if decisive adjustments were made in conjunction with the meetings with municipalities and retailers. The fact that the switchover would take place on one single day over a large geographical area that consisted of several different media coverage areas placed new demands on the information tours. Basic principles, however, were the same.

Phase 3 appeared to be relatively uncomplicated. There was also a sense of security among all those involved after the two previous phases. There was a risk that information could be disseminated in a routine manner and without the focus that each individual area deserved. Preparedness and awareness of potential emergencies were still important.

An important lesson from phase 2 was that even if comprehensive awareness of digital TV in Sweden was close to the 100% mark, each sub-phase constituted a completely new switchover

for households in the relevant area. Even if we and the other involved parties considered information initiatives to be non-dramatic and a repetition of an established strategy, information and digitalisation were new and unique for the households comprised by the switchover. The most central strategic adjustment before phase 3 was to implement the planned campaign with the same amount of focus and care as in the two previous phases.

New start for municipal and industry meetings.

The relatively low level of interest for the municipal and retailer meetings in phase 2 meant that an adjustment needed to be made. Just as before, all of the affected municipalities were invited to the first joint general meeting in Stockholm on 14 March 2006. The general meeting gathered 41 of the 58 affected municipalities.

We assumed responsibility for invitations to the local meetings; individual municipalities' had previously held this responsibility. Easily accessible conference facilities were booked at a centrally located hotel. We enlisted CANT's (The Swedish trade association of antenna- and cable-TV business) assistance to help us arouse interest in the retailer meetings, which were held on the same day as the municipal meeting. Participating companies and installation engineers attended a mini trade fair located next to the conference facilities. This offered municipal representatives the chance to better their understanding of relevant products and services. It also gave them the chance to ask questions on site.

A total of six municipal meetings were held in the cities Jönköping, Skövde, Borås, Kalmar, Växjö and Halmstad. The number of meeting participants noticeably increased as an average of 75% of the invited municipalities attended. Overall, the retailer meetings held in phase 3 had over twice as many participants as the meetings in phase 2. The mini trade fair and a more developed organisation also resulted in PR and media coverage in the relevant areas, and the local media opted to report on the digital TV switchover at an earlier stage.

At the end of 2006, we were able to ascertain that we had been in direct contact with a total of 504 retailers and installation engineers: 121 in phase two, 272 in phase 3 and 111 which would be affected in phase 4. Retailers and installation engineers were generally well informed, interested and active in switchover efforts.

Mailings and advertising

Advertising in the local press during phase 3 followed the same pattern as previously; that is, focus was on supporting our and other players' local presence during the digital TV days, in addition to calling attention to digital TV as such before the switchover day. The billboards that had been used in phase 2 were once again used at a number of small cities such as Kalmar and Älmhult in phase 3.

A modification was made to the information mailings that were sent to households. The order for sending the information brochure and postcard was reversed. The reminder postcard was sent out as a means to arouse interest before the

summer holidays began, and the brochure was distributed at the end of September after the Riksdag election. The underlying reason for reversing the order was that distributing the brochure before the summer holidays would have been premature. The upcoming Riksdag election also meant that the brochure risked getting lost among all the election literature that was distributed in August and September.

Digital TV days

Local presence in the form of digital TV days continued during phase 3 as well. We visited around ten shopping centres at various locations from Västervik in the east to Varberg in the west. Since all of the locations in phase 3 were to be switched over on the same day, the digital TV days were held as early as September, which was relatively far in advance of the 6 November switchover day. The local media in some areas believed that September was far too early to begin monitoring the issue in any depth. However, our local presence contributed to arousing the media's interest and helped establish contact that endured all the way to the switchover. Increased interaction such as phone-ins and reader query columns were possible to manage from Stockholm by using a telephone and radio links.

Phase 3 summary: Functioning logistics

The fact that all of the areas included in phase 3 switched over to digital broadcasts on one single day did not change information dissemination to any great extent. Naturally, the large area placed stringent demands on the logistics of information

initiatives, but it was apparent from an early stage that households had been sufficiently informed and were ready. The challenge involved coping with possible problems on switchover day; monitoring and following up all of phase 3 simultaneously was problematic.

Teracom's technical work was quickly completed at a total of 160 transmitter sites, and the switchover day progressed smoothly on 6 November. Our post measurements for phase 3 showed that 85% of households felt they had received an adequate amount of information, and just over 90% of households in the affected areas felt they had been given a sufficient amount of time to prepare for the switchover.

The success of phase 3 was primarily the result of the responsible parties managing to maintain their level of concentration and lucidity and not just because information had been developed and refined. It was not the solutions that were unique; rather, insight into the importance of managing all of the phases of the project with the same level of commitment as in previous phases was a decisive factor, since the project was riddled by pitfalls and potential emergencies in all its phases.

Phase 4 – In a tough spot again

The first metropolitan phase

Phase 4 consisted of three sub-phases:

- Stockholm on 12 March
- Västernorrland and Jämtland on 16 April
- Norrbotten on 14 May.

Stockholm posed a challenge due the large number of cable households and because the national mass media is established there. An equally great challenge involved preventing all of the resources from being devoured by the metropolitan switchover and ensuring that the same amount of effort was put into the sub-phases in the geographically vast and sparsely populated region of Norrland. As regards the switchover in Norrland, conditions were presumed to be largely the same as for phases 2 and 3, which meant that the working method could be repeated.

The Stockholm switchover entailed a number of new challenges in terms of information. The challenges primarily pertained to providing appropriate information to densely populated areas with different types of TV reception that were also subjected to a buzz of information. There were a large number of households to inform, and competition for attention was more intense than before.

Neither were we able to count on the same sort of assistance from the media that we had received during previous phases. It was difficult to arouse the interest of big city journalists, and PR work was expected to be more heavy-going. Furthermore, reports from the metropolitan and evening press on the Gotland switchover in September 2005 had been relatively problem oriented, which contributed to our misgivings that information dissemination would be more complicated in this phase. Phase 4 meant that the digital TV switchover was once again a matter of national interest, not only for the media but for all the involved players.

It was clear that both publicity and market share were at stake. Consequently, we were not surprised when the old conflict with the satellite and broadband companies was fanned to life. In a letter to the editor in Svenska Dagbladet, the second largest Stockholm newspaper, the companies once again claimed that the Commission's efforts benefited the terrestrial network. We were – once again – in a tough spot.

More market information

As a result of the new prerequisites, a number of adjustments were made to the Stockholm switchover information campaign. We had conducted a preliminary study in order to chart Stockholm's unique situation; cable penetration was higher than in the rest of the country and reached almost 80% in the inner city. It was important to understand how Stockholmers obtain information, and use the mass media in order to ascertain any connection between attitudes to obtaining information and the way households received TV. The analysis showed that cable TV viewers were still largely uninformed of how they received TV. This in combination with a different type of media climate meant that we were unable to rely upon PR and civic information to the same extent as previously. It also meant that we would have to fight for media attention more than had been the case previously. We were initially uncertain of how a different approach would be perceived. Taking a different approach could be interpreted as Stockholmers receiving a more lavish information campaign. Nevertheless, the adjustments were necessary, and the aspect of fairness was given the back seat to the aspect of effectiveness.

The solution was a more integrated information strategy. For example, there were no resources available to spend on major advertising campaigns, no matter how short-lived. Rather, more creative and long-lived solutions with obvious PR potential and a possibility for massive penetration were required.

A new concept, “Now it's our turn”, emerged. Industry and municipal meetings

The first general meeting prior to phase 4 was held on 29 May 2006. The early date was chosen due to the large number of residents in Stockholm, which could require more detailed planning on the part of the municipalities. However, the early date had the opposite effect, and only half of the invited municipalities attended. This was far fewer than anticipated. Thus, we organised a follow-up meeting on 19 October 2006 in conjunction with the CANT and Digital Home trade fair in Stockholm. Attendance was much better this time, and information had the desired effect. We conducted a poll in the Stockholm municipalities at the beginning of 2007 that indicated preparations had gone well and that municipalities were well prepared.

Regional municipal and retailer meetings were held for the affected municipalities in northern Sweden in Luleå, Östersund and Sundsvall in the middle of September 2006. Of the 36 invited municipalities, 25 attended.

Due to a lack of interest, there were no retailer meetings held in the Stockholm area. The expla-

nation for the relative disinterest on the part of the industry can perhaps be attributed to a combination of different factors – the vast general awareness of digital TV and the Commission's work that the industry had obtained over time in combination with extensive market and product development. An increasing number of TV sets on the market had integrated DTT receivers. Previous discussions regarding a lack of products and sluggish market development were no longer relevant. “HD-ready” labelling, though, was still problematic since many consumers believed that they would automatically receive HDTV. We received a vast number of questions pertaining to this and HDTV in general. It was clear that HDTV was evolving into an option for which an increasing number of consumers were planning.

Mailings

Prior to the Stockholm switchover, we considered modifying the structure of household information mailings. Considering the high level of cable penetration, there was discussion of whether those households needed to receive the information brochure. Distributing direct information to cable households was considered somewhat superfluous, and the chance to release resources for other information activities was appealing. However, it was difficult to ascertain with any certainty which households could be excepted from the mailing. Furthermore, our surveys indicated there was still a widespread lack of knowledge among cable households about how they received their TV signal. Thus, the Commission decided it was still obligated to inform cable households of the switchover.

The pink information brochure was distributed to all of the almost one million households in the Stockholm area at the beginning of 2007. Just over a month later on 22 February, the brochure was distributed to the 340,000 households included in the phase 4 switchover in Norrland.

The reminder postcard was not sent for phase 4. Our surveys indicated that this was the least effective information initiative.

Market activities

The high cost of advertising in the Stockholm area meant we needed to review the type of advertising that had been used in previous phases. Instead of extensive advertising in the morning papers, focus was directed to free newspapers and the local press in the suburban areas. Just as in previous phases, advertising aimed to support our information tour, which included the digital TV days at shopping centres in the Stockholm area, and to call attention to the switchover day.

The largest advertising campaign was conducted underground. A rolling advertising medium was visible for a three-month period – a 50-metre long pink underground train car with the digital TV switchover's logotype. The car operated at the same time as basic information activities were going on – information brochure, local flyer advertising and meetings. The total cost of the campaign basically corresponded to a whole-page advertisement on page three in the two major Stockholm newspapers Dagens Nyheter and Svenska Dagbladet.

The pink bus starts rolling

Another feature of the Stockholm switchover was the pink information bus. The bus was a re-vamped Stockholm Transport bus that had been equipped with digital TV equipment. It was used in conjunction with the information tours to shopping centres in the Stockholm area. The bus efficiently transported the equipment and information material used during the tour, and it also served as a visible billboard with PR potential. The bus quickly evolved into a symbol of the entire digital TV switchover, and it represented active and mobile information initiatives. We received a great many questions in 2007 about when the bus was scheduled to visit various regions around the country.

At the start of 2007 and phase 4, the necessity of being able to demonstrate various solutions was even more apparent, as was the necessity of giving straightforward responses to questions pertaining to programme content and the different operators' programme packaging and offerings. The bus offered better prerequisites for coordinated information activities, which meant we could invite all of the pay-TV operators and new freeview channels to take part in the information tour. The increased number of free channels offered a clear advantage to viewers who were not interested in taking out a subscription with any of the operators. We still believed that providing information about this option was within our realm of responsibility. The questions we received during the information tour pertained to various solutions and programme offerings, but Telia's broadband TV offering was the option that prob-

ably aroused the greatest amount of interest. It was clear that broadband TV was now an option for many households.

The information tour in the Stockholm area lasted six weeks and included over 20 stops in the Stockholm area including nearby cities such as Nynäshamn, Norrtälje, Strängnäs and Märsta. Among other things, it became clear that a great many cable viewers in the Stockholm area were still uncertain what the switchover to digital terrestrial TV entailed. As a result, we teamed up with the main cable operator Com Hem to inform cable TV viewers that their concerns were ungrounded. Our efforts were only partially successful.

On the whole, the bus attracted a great deal of attention and media coverage. It emerged as a central aspect of our continued information dissemination efforts. The bus also visited around ten locations in Jämtland, Västernorrland and Norrbotten during the latter part of phase 4. In Norrland, the pink digital TV bus fulfilled an important logistics function, and our local presence was greatly appreciated even if the number of visitors in some small cities were very low.

Media penetration

In contrast to earlier predictions, media coverage during the Stockholm switchover did not greatly deviate from other phases. The Stockholm press also adopted the stance of providing consumer information, and pieces that problematised the issue were rare. Coverage was comprehensive with continuous reporting. We participated in

several media to respond to reader and listener questions. The reader query columns we initiated were now of a more technically complicated nature. This showed that levels of knowledge were now so high that technical follow-up questions were the most common type posed. The reader query columns also constituted a central feature of information dissemination in conjunction with the switchovers in the other two major towns, Gothenburg and Malmö, later in the autumn. Reader query columns and phone-ins were by far the most important features during the final two phases – there were no obvious meeting places in the last two phases in Stockholm, Gothenburg or Malmö, or in Norrland where distances between central locations are long.

The main underlying reason that enabled us to achieve such effective collaboration with the media throughout the entire switchover process is naturally due to the fact that digital TV was of immense interest to the entire country. That media reporting was so clearly focused on consumers and solutions, however, can primarily be explained by the Commission's neutrality. In our contacts with the media, we were clear in our message that we did not represent any commercial interest. Our assignment was not to market or argue for digital TV, but to provide information on what the switchover entailed.

The fact that the Commission was perceived as neutral without a hidden agenda considerably facilitated PR work since the media did not feel like it was being used as a megaphone. Neutrality as such was an invaluable asset in disseminating in-

formation, especially compared to players with corresponding roles in other countries. In Norway, for example, commercial interest in the switchover is pronounced, and the relationship to the mass media in the United Kingdom is considerably more charged.

Phase 4 summary: Digital TV on skis

All of the switchovers in phase 4 were completed without difficulty. The switchover in two parts of Norrland: Jämtland and Västernorrland on April 16 posed the greatest challenge that had been faced up to that point due to the large number of transmitter stations that were to be converted – just over 200. Technical work progressed according to plan, though, and questions to our assistance telephone on switchover day were fewer in number than on normal days. The most interesting aspect of these switchover days was perhaps that Teracom not only had to enlist the assistance of snowmobiles and a helicopter, it also had to send skiers to reach the most remote transmitter sites on 14 May.

The surveys we conducted a few days prior to the switchover in Stockholm indicated that 98% were aware that the switchover was going to take place and just over 90% said they had received a sufficient amount of information to allow them to prepare. However, there were more calls to the assistance telephone than on a normal day – around 1,200. Most of the questions concerned reinstallation of digital receivers, which was a recognisable pattern from previous phases.

Phase 5 – Final and biggest

The circle comes to a close

Phase 5 was not only the final phase, it was also the largest – both in terms of geography and number of households. The phase included almost a third of all Swedish households, that is a total 1,355,000 households. The phase was divided into three geographical sub-phases:

- Värmland and Västerbotten on 3 September
- Gothenburg, Bohuslän and Dalsland on 24 September
- Skåne and Blekinge on 15 October.

Phase 5 can be seen as a synthesis of all the previous phases. The switchovers in Gothenburg and Malmö were in many ways similar to the switchovers in the Stockholm region. Värmland and Västerbotten resembled the earlier phases in northern and central Sweden. It was clear to all those involved that this major project would soon be complete. The final switch off at the Hörby transmitter site on 15 October was something of a repetition of the digital TV switchover's initiation on Gotland two years previously due to its symbolic significance for the entire project and the scope of the Commission's efforts.

One new challenge faced in phase 5 was related to the switchover's effect on television in neighbouring countries. The switchovers in Skåne and Värmland inspired questions about Danish and Norwegian TV viewing. These issues had to be addressed even if our obligation to provide information was limited to Sweden.

A successful conclusion

From a logistics and information point of view,
CHAPTER 3. INFORMATION CAMPAIGN

phase 5 was a synthesis of successful segments from earlier phases. In the analysis phase in 2004, the Commission made the strategic decision to maintain a clear focus throughout the entire project, and that the basic tone and message should remain constant throughout. Even if modifications and additions had been made to information dissemination at the same rate that awareness and the market had developed, households in Skåne were to feel like they had been equally well informed as households on Gotland. The integrated concept that was used in the metropolitan areas was used again, and the bus tour continued to form the foundation of information dissemination. Dialogue with households continued to develop with the assistance of additional reader query columns and chatting via the local media.

One decisive factor of success for the entire switchover project at that point was the collaboration among the Commission, Teracom, SVT and TV4. The digital TV switchover was made possible by a common objective to achieve a smooth transition. Despite somewhat competing agendas and business objectives, at the end of the day, our aim was to conclude the project successfully.

Industry and municipal meetings

The municipal and retailer meetings in phase 5 progressed smoothly and followed earlier patterns. Meetings were held in the main town of the affected areas, in Umeå in January 2007 and in Karlstad, Gothenburg, Malmö and Kristianstad in March 2007. Interest on the part of municipalities was a repeat of phase 4; major cities such as

Gothenburg and Malmö were difficult to attract while smaller municipalities involved themselves early on. The quick market development that got off the ground as a result of phase 1 continued, and we noted a swift addition of new products and alternative solutions. It was also clear that the issue of price was continuing to decrease in importance for the majority of consumers. Consumer buying power and an increased interest in home electronics, especially flat TV screens, helped facilitate the switchover and the Commission's information dissemination.

Mailings and campaign

Direct information to households also followed previous patterns. The brochure appeared in letterboxes of all 1.3 million households included in phase 5 at the end of May. Households in Västerbotten in Norrland were an exception. These households had received their brochures in February at the same time that households in other parts of Norrland were informed. We chose to inform the impacted households in Västerbotten earlier because of a boundary fixing problem that resulted in a small sliver of Norrland not being affected by the switchover in spring 2007. Households in Västerbotten received a reminder postcard a couple of weeks before the switchover on 3 September instead.

For obvious reasons, the underground campaign could not be repeated in the rest of Sweden. Otherwise however, we believed that Gothenburg and Malmö could be managed according to the same model used in Stockholm. The communication challenges faced here were clear – large

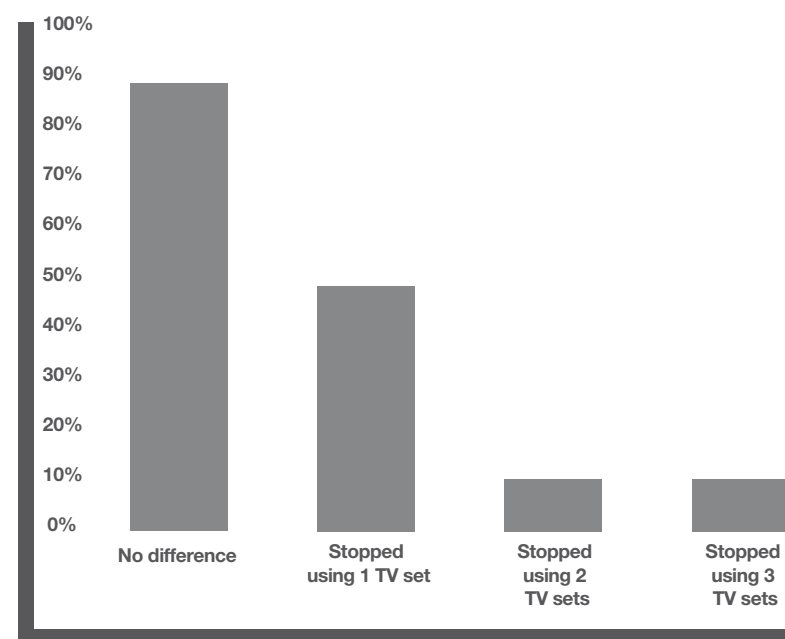
areas, large flows of information and a large number of cable TV viewers. Due to the difficulty of obtaining permission, it was not possible to use the commuter trains in Skåne or the tram in Gothenburg to adapt the Stockholm underground initiative to the local areas. Large placards at local centres of activity and advertising space on buses and taxis were used instead. Penetration was good, but the level of attention

received by the campaign did not reach the same high level as the campaign in the Stockholm underground.

Tours and media contacts

The scope of the phase and its geographic distribution resulted in a comprehensive information tour. The pink bus visited the cities of Storuman, Skellefteå and Umeå in Norrland to call attention

Share of households that stopped using TV sets as a result of the digital TV switchover



98% of households still watch TV, which is unchanged in comparison to before the switchover. Taking into consideration responses related to satisfaction, it can be concluded that Sweden's digitisation of the terrestrial network has been unproblematic for most households.

to the switchover scheduled for 3 September as early as at the end of May/beginning of June, right after phase 4 had been concluded. The information tour continued in the autumn with stops in the cities of Karlstad, Trollhättan, Uddevalla, Gothenburg, Helsingborg, Burlöv, Malmö, Ystad, Kristianstad and Karlskrona.

Västra Götaland posed a major challenge in terms of information. Parts of Västra Götaland had already switched over one year earlier in phase 3, but new frequency changes at the Borås transmitter site meant that many households would be forced to reinstall their set-top boxes in conjunction with the switchover in Gothenburg on 24 September. In practice, this entailed a second switchover for the impacted households. Naturally, many households were uncertain whether they were affected or not. Teracom and the Commission provided the local media with information in an attempt to clarify the issue. Coverage conditions along the west coast also prompted questions. Many households did not gain satisfactory reception until after switchover day since a number of relay sites did not begin broadcasting digitally until after analogue broadcasts had been switched off. The pink bus and information tour continued to achieve high levels of penetration, and we were able to provide a great deal of information via reader query columns in the morning papers, for example. A month-long collaboration with the major Gothenburg newspaper Göteborgsposten before the switchover on 24 September enabled us to respond to detailed questions of a practical and technical nature.

Phase 5 summary: A successful conclusion

The first two switchover days in phase 5 greatly resembled previous switchovers. The local media oversaw analogue broadcasts being switched off, and the press and press releases referred to "pushing the button". Both the pink bus and button pushing had become established concepts that were strongly associated with digitalisation of the terrestrial network.

The switchover in Värmland and Västerbotten on 3 September resulted in 800 calls to our assistance telephone, and the switchovers in Gothenburg, Bohuslän and Dalsland on 25 September in a little over 1,500 calls. Both of these figures were completely in line with previous patterns.

The switchover on 15 October was somewhat unique, though. Exactly 757 days had passed since the switchover on Gotland. Part of the nervousness and charged atmosphere that had characterised the Gotland switchover had returned. Announcements of the final switchover day were extensive, and Sweden's Minister for Culture Lena Adelsohn Liljeroth and Teracom's CEO Crister Fritzson were assigned with pushing the button for the last time. SVT and TV4 were also represented by members of senior management. A press conference was held when all analogue broadcasting had been switched off to emphasise the day as historic for Swedish TV. It was clear that completed digitalisation entailed new and important issues for the TV industry. The question of how the freed-up frequencies should

4. INTERNATIONAL VIEW



³⁵ "Implementation of Digital Terrestrial Television in the European Union: comparative analysis of the public policies in Sweden and Spain" Thesis dissertation. Pompeu Fabra University, Barcelona.

be used was top priority, and the last button being pushed in Hörby on 15 October signalled a clear starting point for TV in the future. The digital TV switchover as a trademark was a thing of the past, and new issues were ready to take over.

Since Sweden was one of the first countries in the world to switch over to digital terrestrial broadcasts, there was not a great deal of information available from similar projects in other countries. The Digital TV Commission has stayed updated on international development, and has been on several study visits to Germany, Italy and the United Kingdom, for example.

The days of analogue TV technology are clearly numbered. Provided nothing unanticipated happens, the final analogue terrestrial broadcasts in the industrialised world will have probably been switched off within a period of ten years. Not even five countries have completely switched out the technology (*March 2008*) at this time, but planning and preparations are underway all across the globe (*see map*).

As a result, international interest in the digital TV switchover in Sweden has increased since 2004, primarily in terms of planning the switchover, initiatives directed to consumer groups with special needs and product development. Sweden is considered a pioneering country – especially in terms of switching over by area. Thus, the Commission has received visits from France, the U.S., South Korea and South Africa, for example.

International interest has also been of an aca-

demical nature. The Commission's work in 2004 and 2005 has been the object of researchers such as Roberto Suarez, Ph.D. from Universidad Pompeu Fabra in Barcelona.³⁵

Digital TV Commission's study visits

Germany (Berlin)

The Digital TV Commission travelled to Berlin in June 2004 on a study visit. In Berlin the switchover from analogue to digital terrestrial TV was carried out in 2003 – making the city the first in the world to do so. We met with the parties responsible for the digital TV switchover in Berlin-Brandenburg and with representatives of the city state's senate administration, education and research.

The lessons we learned during our trip to Germany greatly influenced our own planning efforts – especially in terms of collaboration with the municipalities in Sweden. We used the Berlin agreement in principle as our role model. The German "MOU", Memorandum of Understanding, was used as a steering document and tool to facilitate collaboration and carry out the switchover as smoothly as possible.

Finland

The Commission visited Finland six months later (*December 2004*). The switchover there had been scheduled for 31 August 2007 for the entire country and for both the terrestrial networks and cable. We met with representatives of the Finnish Ministry of Transportation and Communications, the Finnish Consumer Agency and Digita, the operator of the terrestrial network.

Increasing interest from the rest of the world

Interest in the Swedish digital TV switchover model increased in autumn 2005 when it was put into practice. An increasing number of our contacts with international parties involved sharing experience from Sweden. As a result, our international contact network was expanded over the course of 2005 to include Norway, Spain, Italy, the United Kingdom, Japan and Brazil. We also gave a lecture at a gathering of Nordic mass media authorities.

Italy and the United Kingdom

Commission representatives went on two more study visits in 2006: Italy (March) and the United Kingdom (May).

- The switchover in Italy was scheduled for 2006 (*this was later postponed to 2012*). We met with communications authority Agcom, the DGTVi consortium and Sitcom, a broadcasting company.
- The switchover in the United Kingdom was scheduled to take place between 2008 and 2012 (after having been previously postponed). We visited satellite operator BSkyB, the independent regulator and competition authority for the UK communications industries Ofcom, the DTI³⁶ and DCMS departments, the Commission's counterpart Digital UK, industry organisation Intellect and the public service company BBC.

Our visit to the UK also led to ongoing contact, in particular with Digital UK and DTI. Digital UK requested ongoing information related to the Commission's communication initiatives. We took part in a seminar on product development at DTI in June 2006.

Other contacts

The Commission also developed contacts with players in other neighbouring Nordic countries, such as Branchen ForbrugerElektronik in Denmark. A particularly large number of contacts were made with various actors in Norway, such as

- NTV (*Norges televisjon*)
- Digitalforum
- The Ministry of Culture and Church Affairs
- The Consumer Council of Norway
- NRK
- RiksTV.

Over the three years it took Sweden to complete its switchover, Finland, Norway and Denmark have decided to switch over, and the Commission has served as an advisor to them at times. The United Kingdom has also obviously been influenced by the Swedish model as well as adopted segments of it.

Questionnaire survey on carrying out the digital TV switchover in ten countries

Before writing this final report, we conducted a questionnaire survey with the aim of charting how digital TV was progressing in other countries.

Representatives from a total of ten countries responded: Finland, Norway, Denmark, Germany, the United Kingdom, France, Italy, Spain, the Czech Republic and the U.S. (*See Appendix 11.*)

Decision-making

The decision to switch from analogue to digital terrestrial TV was taken by the parliament or Government in all of the queried countries. None of the decisions were the result of a completely market-driven process. Thus, a definite final date as determined by the Government seems to be an important point of departure for the switchover in all of the countries.

It is interesting to note that this also applies to the UK which began by making its switchover process dependent upon market-driven penetration for digital TV, but which then decided to plan on the basis of a specific switchover date.

Differences in prerequisites

There are several factors that influence how countries design their switchover plans, such as

- number of households that are dependent upon the terrestrial network
- vigour of various special interest groups
- interest from the media
- how the terrestrial network is designed and who is in control of it
- available frequency space
- if there is already digital broadcasting over the terrestrial network
- political decisions on subsidies to specific groups.

The switchover plan has most often been drawn

up under some sort of influence from the Government, while market player participation has varied. Market players have been involved in planning and information activities from an early stage in the countries where switchover efforts have progressed the most smoothly. Involvement has in some cases been reinforced by specific assignments that were incorporated into each of the players' broadcasting licence. For example, the BBC had a great deal of responsibility for providing information and assistance during the switchover in the UK.

It is interesting to note that almost complete political agreement regarding the necessity of switching over from analogue to digital broadcasting on the terrestrial network is clear in all of the countries. This means that political considerations have not affected switchover planning to any great extent.

Technical standards

The choice of technical standard for digital TV broadcasts has a certain significance when carrying out the digital TV switchover. For example, Norway decided to switch over to the more modern MPEG-4 video format from the start instead of to MPEG-2, as Sweden did, for example. This means that the digital TV switchover in Norway will lead to terrestrial broadcasts being able to accommodate additional channels, and that viewers will eventually have access to HDTV (*high definition TV*). An important underlying prerequisite of Norway's decision to invest in MPEG-4 from the start was that it had no digital broadcasting prior to the switchover being initiated. An increasing

³⁶ Currently BERR – Department for Business Enterprise and Regulatory Reform.

number of countries are planning for a gradual switchover to MPEG-4 – directly or via MPEG-2. This is true of France, the UK and Denmark, for example, which is an indicator of how quickly development progresses once it gets off the ground.

Organisation

Commercial interests had in several instances been given some responsibility for information dissemination; these efforts have only been solely Government-based in Sweden, Germany and Finland. Most countries have a specially appointed organisation to coordinate information initiatives and to ensure that the information consumers receive is neutral. These groups have some sort of connection to the Government; for example, through the budget or because the group's members were appointed by the Government. The U.S. is an exception; information initiatives there are exclusively managed by NAB (*National Association of Broadcasters*), which is trade association that advocates on behalf of all radio and TV broadcasters. The U.S. Government, however, has determined that each household will receive a USD 40 subsidy to purchase equipment. Neither has Norway created a new organisation; rather, the existing mass media authority has been assigned with ensuring that information dissemination is sufficient and accurate. However, RiksTV, a commercial player, was created in Norway to act as an operator much as Boxer has on the Swedish terrestrial network.³⁷ Overall responsibility in Finland has remained with the Ministry, but several commercial players have had active roles in dis-

seminating and formulating information. In Denmark, a model has been produced in which a commercial player will be responsible for content as operator and for expanding and operating the digital terrestrial network.³⁸

Implementation plans

Like Sweden, most countries have decided to switch over from analogue to digital broadcasts in phases. This entails gradual switch off where one or more channels are switched off at the same time that a few analogue channels continue broadcasting during a transition period to allow consumers time to adapt.

In Finland and the Netherlands, however, the switchover was completed on one single day all over the country. The U.S. is planning this type of switchover as well.

It is also worth noting that most countries in the survey had already initiated their switchover to digital terrestrial broadcasts. Most of the switchovers should be complete by 2012 in accordance with the European Commission's recommendation (*refer to the section below "Harmonising measures within the EU"*). There is general agreement that receiving additional channels is the one aspect that can prompt consumers to act.

None of the other countries has followed Finland's lead in carrying out the switchover on one single day for both the terrestrial and cable networks. Just as was the case in Sweden, switchover ef-

orts in most of the countries have focused almost exclusively on the terrestrial network even if there has been an ambition in some countries such as France to pursue and monitor digitalisation issues in a broader perspective. The prerequisites for a broader perspective differ between Sweden and many other countries since some countries require a broadcasting licence for satellite and cable as well, which is not the case in Sweden.

As was the case in Sweden, most countries have already begun broadcasting digitally and will expand the network as their digital TV switchover progresses. Countries that are limited by frequency space are the exception. For example, Norway will begin broadcasting digitally in one area and switch off analogue broadcasts there before digital broadcasts are initiated in the next area. National digital broadcasts, thus, will not be established before the switchover is complete.

The UK also has problems with frequency space. The issue has been resolved by switching off in stages – one switched off analogue channel provides space for a larger digital offering. The remaining analogue channels are switched off a few weeks later to make room for the entire digital offering.

Information dissemination

Most countries have begun switching over in a pilot area to enable them to gain experience from technical implementation and to assess the need for information. Among those that have already begun the digital TV switchover, it is clear that disseminating information early on does not al-

ways result in early action on the part of consumers. Just as was the case in Sweden, consumers more commonly delay action. The pressure that an approaching and clear final date place on the consumer is significant, and premature information tends to exhaust the recipient. This can be exemplified by the Copeland pilot area in the United Kingdom where the digital TV switchover was carried out in October 2007.

All of the countries indicate a great need for information, and they emphasise the importance of it being neutral, objective and adequate. A large proportion of consumers indicate a need to speak with a physical person. Like Sweden, both Finland and the United Kingdom report that many of the calls handled by the telephone service have been time consuming. The people seeking assistance need a great deal of help with the technical aspects of the switchover – reinstallation, for example.

Also like Sweden, many of the countries adopted a local information strategy where local meetings with the general public played an important role. In the United Kingdom, a local team concentrates on providing practical information and assisting the general public during the switchover. Information on quality labelling and testing of digital receivers have been successful.

Resources

There are three ways to approach resource allocation: 1. A few of the countries did not set aside any Government funds for information activities or for expanding the terrestrial network. The switchover process is greatly controlled by

³⁷ RiksTV is owned by NRK, TV2 and Telenor.

³⁸ Negotiations and bidding still in process in Denmark as of February 2008, and news in the matter can be followed on www.mediasekretariatet.dk

commercial interests in these countries.

2. A few countries, primarily Finland, have chosen a combination – a very limited amount of Government funds are allocated to the digital TV switchover at the same time that other players invest in the process. Sweden belongs to this group.
3. Other countries have invested in a comprehensive switchover in which the government allocates a significant amount of funds to information dissemination – the United Kingdom is the most clear example. At the same time, well-developed collaboration with commercial players has evolved, and several broadcasters are obligated to provide information under the stipulations of their broadcasting licences.

Subsidies

Subsidies to help finance digital receivers are granted in basically all of the countries. This is also true in countries such as the U.S. and Italy where the switchover process is more commercially controlled; set-top boxes in these countries are completely or partially financed by market players. In the United Kingdom, the BBC offers aid via funds from licence fees, and a special company has been set up to manage subsidies.

Subsidies are generally offered to the same groups, no matter the country: elderly and functionally disabled individuals and low-income families. Initiatives include information, financing of TV equipment and

installation assistance. These measures are consistent with the European Commission's assessment of the State aid rules that apply in the EU. It would appear that Sweden is fairly unique in relying upon the ordinary or regular social security systems to satisfy the needs of vulnerable groups.

Harmonising measures within the EU

The European Commission's communication for a quicker switchover to digital broadcasts

The European Commission called attention to the issue of switching over from analogue to digital TV broadcasting in a communication in 2003.³⁹

On 24 May 2005, the European Commission supplemented its communication from 2003 and the e-Europe 2005 Actionplan⁴⁰ with a new communication regarding a quicker switchover from analogue to digital broadcasts. According to the communication, the European Commission expects the switchover process to have made a great deal of progress by 2010⁴¹. The communication also proposed that analogue broadcasts should have entirely ceased by 2012, and stressed two factors as prerequisites of a successful switchover:

- A market-driven process in combination with target-oriented coordination of broadcasting companies and other players, via clear political decisions, for example

- an effective strategy for providing information to consumers about programme offerings and equipment requirements – the importance of providing consumers with sufficient and timely information was especially stressed.

Examining support measures

The European Commission examined two cases of support measures in terms of their consistency with the State aid regulations in the Treaty. The examination aimed to determine if the measures satisfied the requirements of transparency, necessity, proportionality and technical neutrality.

One of the cases involved Austria's digitalisation fund. A subsidy programme linked to the fund aimed to support introduction to digital TV broadcasts and facilitate the switchover from analogue to digital TV broadcasts in Austria.⁴² Subsidies from the fund were granted, for example, to pilot projects and for consumer digital equipment purchases, digital services and programme development by companies as well as to help offset the costs incurred by broadcasters as a result of parallel broadcasting. Subsidies were intended to help offset actual cost, and they applied to all platforms.

The second case involved Germany where one particular state subsidised commercial broadcasters to ensure they used the digital terrestrial network for at least five years.⁴³ The programme had been set up after the decision was made to

switch over. Broadcasters had previously been granted broadcasting licences for the digital terrestrial network free of charge. There was no stipulated justification for the scope of the subsidy, and there was no connection to actual cost. The support measures in Austria were deemed permissible, but not in Germany. The State aid regulations in Germany were believed to potentially give rise to reduced competition. Neither did the support measures satisfy the requirements for technical neutrality and necessity. With its decision, the European Commission clarified that some support measures were allowed in conjunction with the switchover to digital broadcasting in Europe. Examples of such measures are

- regulation
- financial support to consumers
- information campaigns
- subsidies to balance market disruptions.

One condition, however, is that the Member State can demonstrate that aid is the most suitable instrument, that it is limited to a minimum and that it does not impede competition.

³⁹ Communication from the European Commission to the Council, European Parliament, European Economic and Social Committee and Committee of the Regions on the switchover from analogue to digital broadcasts (from digital "switchover" to analogue "switch-off"), KOM (2003) 541 final.

⁴⁰ Communication from the European Commission to the Council, European Parliament, European Economic and Social Committee and the Committee of the Regions, eEurope 2005: An Information Society for All, KOM (2002) 263 final.

⁴¹ Communication from the European Commission to the Council, European Parliament, the European Economic and Social Committee and the Committee of the Regions on a quicker switchover from analogue to digital broadcasts KOM (2005) 204 final.

⁴² European Commission decision of 16 March 2005 for matter N622/2003.

⁴³ The European Commission's decision of 9 November 2005 regarding Government subsidies that Germany granted to promote the introduction of digital terrestrial TV broadcasts (DVB-T) in Berlin-Brandenburg, C(2005) 3903 final.

5. OTHER INFORMATION

The Digital TV Commission has also monitored other issues and areas related to TV that are not directly related to the switchover:

- must-carry regulations
- preparedness perspective
- proposals for action to the Government.

5.1 Information needs related to must-carry regulations

138 One of the Commission's tasks involved monitoring new legislation related to must-carry regulations and to consider what information might be needed as a result. The task was included in the assignment to provide information about the switchover from analogue to digital broadcasts on the terrestrial network.

Must-carry regulations constitute the legislation that regulates which programme offering cable households are entitled to receive without the necessity of paying for reception. The reason underlying the regulations is to guarantee that cable households have access to a certain number of channels with a varied programme offering even if they are typically only referred to one operator.

The assignment was deemed important since 50% of all households are connected to cable. Must-carry regulations, both new and old, are also closely linked to the development of digital terrestrial network broadcasts. It was thus important that property owners and individual cable households received clear information about the new rules.

New must-carry regulations

The commission of inquiry into the Radio and Television Act submitted its progress report, Must Carry, in November 2003. The Government was tasked with drafting new rules for must-carry regulations in 2004. On 26 May 2005, a little over three months prior to switchover day on Gotland, the Riksdag stipulated new must-carry regulations.⁴⁴

The new legislation went into effect on 1 July 2005. The new regulations had been adapted to the fact that all terrestrial broadcasts were to be digital upon completion of the switchover. It meant that must-carry regulations comprised more channels than previously:

- Must-carry regulations previously comprised SVT1, SVT2 and TV4 on the analogue network and one additional public service channel, such as SVT24, on the digital network.
- After the amendment to legislation, must-carry regulations comprise a maximum of four simultaneously broadcast programme services. The services must be broadcast by a licence holder whose activities are financed by TV licence fees. These programme services currently (*spring 2008*) include SVT1, SVT2 and SVT24, as well as the thematic channels Barnkanalen and Kunskapskanalen which share a programme slot and are broadcast at different times.

During the period of transition continuing through 1 February 2008 which is the date stipulated by the Riksdag decision for the switchover to be complete, a maximum of one programme service broadcast by another license holder must be retransmitted. TV4 is the other licence holder.

According to the new legislation, net operators may decide if retransmission shall be digital or analogue. If the cable network uses both analogue and digital technology, SVT1, SVT2 and

TV4 (*the latter until February 2008*) must be broadcast in analogue. A consequence of the rule is that SVT1, SVT2 and TV4 must be available in the basic analogue offering to which households that are connected to the dominant cable TV operator Com Hem have access. For the other channels included under the must-carry regulations operators may choose distribution technology. The new rules began to apply at the same rate that analogue terrestrial broadcasts were switched off in various areas.

Information vacuum led to various interpretations

139 The Digital-tv-Commission received a great many questions in 2004 from the general public pertaining to the must-carry regulations. It was clear that there was a great deal of concern and confusion in the area. The must-carry regulations for cable networks were often confused with being able to receive the digital terrestrial network's uncoded freeview TV channels. Even before initiating information dissemination efforts (*in conjunction with the terrestrial network switchover*), we were able to ascertain that the need for information in these areas was great. We initiated contact with the following organisations to set the process in motion: SPA (*Svensk Programagentur*), SVT, the Swedish Consumer Agency and the Radio and TV Authority. More concrete measures, however, were not taken since we were anticipating a Government bill amending the legislation.

⁴⁴ Prop. 2004/05:105, bet. 2004/05:KU26, rskr. 2004/05:252.

The number of questions increased after the new legislation of 1 July 2005. Many people had difficulty interpreting the importance and consequences of the new legislation. Since a period of time passed before matters related to the must-carry regulations began to arrive to the Radio and TV Authority, the Authority did not develop a set practice in the area before 2006-2007. This initially resulted in an information vacuum in which the different players provided information about the applicable rules based on their own perspective, which led to even more confusion since the multiple interpretations were subjective.

Information initiatives related to the digital TV switchover

The need for information was becoming increasingly plain, and we continued our attempts to create clarity in terms of interpretation and information in our contacts with the Swedish Consumer Agency and the Radio and TV Authority. Due to budget constraints, we were limited in our ability to implement information initiatives in the area. Providing information would also not have been appropriate considering that the Radio and TV Authority was the authority that was responsible for applying the new legislation and because it was important not to precede the Authority's information.

The Commission's role in this context was thus limited to providing general and comprehensive information that was more directly linked to the digital TV switchover, where we could serve as coordinator and offer a factual basis for consumers and property owners. More concrete questions and questions of principle were referred to the Radio and TV Authority. Comprehensive information for property owners, though, had already been available on our website since December 2005. The information mostly pertains to the obligations property owners have to tenants, as well as the various alternatives with which property owners were faced in conjunction with the switchover. Basic information has also been available via our telephone service.

The need for information about must-carry regulations has subsequently subsided and, as the Radio and TV Authority received matters related to the must-carry regulations, the scope and rules for interpretation became clearer.

5.2 The switchover from the perspective of preparedness

The National Board of Psychological Defence (SPF) initiated a project in 2005 at the Swedish Defence Research Agency to study digitalisation of the TV media from the perspective of mass media preparedness. The aim of the study was to follow the digital TV switchover and create an awareness of any vulnerability and new opportunities that might arise. The project followed the entire digital TV switchover through December 2007.

In 2005, the project was mostly focused on creating an overall view of the Swedish switchover to digital terrestrial TV from the perspective of mass media preparedness and on making direct observations in conjunction with the first phase of the switchover. The initial results of the project were presented at a seminar and in a preliminary report in spring 2006. SPF also initiated a newsletter within the framework of the project to com-

municate the project's accumulated knowledge on an ongoing basis. A follow-up seminar was held in May 2007, and SPF plans to publish the project's final report in March 2008.

SPF believes that technical systems are generally vulnerable when major changes are made. Switching out technology necessitates new learning and can negatively impact security and preparedness during the period of learning. However, SPF made the overall assessment that the digital TV switchover has proceeded according to plan and without any major complications. One issue that SPF stressed as positive from the perspective of preparedness is that SVT1, as a security measure, has continued to broadcast in analogue an additional two weeks after each local switchover.

5.3 The Commission's three proposals for measures that required the Government to take a position

The Commission forwarded proposals for measures on three occasions that required the Government to take a position. In addition to the two proposals that concerned phase 1 (*27 September 2004*) and the switchover plan for the rest of Sweden (*20 April 2005*), we also called the Government's attention to a modification that needed to be made to TV4's analogue broadcasting licence.

Our budget constraints prevented us from purchasing advertising space on TV. TV4, however, expressed interest in airing our information clip

free of charge provided doing so would not entail a reduction to the company's opportunities to broadcast paid advertising. After contacting the Commission, the Government decided to modify TV4's broadcasting licence conditions on 17 March 2005⁴⁵. The modification stipulated that TV4's obligation to broadcast information from authorities was extended to include information about the switchover from analogue to digital broadcasts on the terrestrial network. It was then possible to air our short information clips on TV4 before each phase on a regional basis.

⁴⁵ Government decision Ministry of Education, Research and Culture 17 March 2005 no. I:23.

The Digital TV switchover in pictures



PHASE 1
Gotland 2005.09.19
Gävle 2005.10.10
Motala 2005.11.21

146 A low-key tone and a tentative beginning. The strategy was formulated, but the first phase entailed a test to find out whether the message, form and method worked. During Phase 1, which covered 200,000 households and only three municipal seats, we were able to make several on-site visits and really work with establishing support on Gotland and in Gävle and Motala.

Resources were tight at first, but our budget was increased just before the switch on Gotland, so we could step up information efforts before the first switchover date, 19 September.



Visby Gotland **Gävle** Hofors Sandviken Ockelbo Älvkarleby
Motala Askersund Finspång Karlsborg Mjölby Vadstena

The pink envelope was distributed to 200,000 households in Phase 1



Ingemar släckte tv-rutan



SNART DAGS. Några sekunder återstår innan Ingemar Lindroth släcker ned de analoga och digitala sändningarna från stationen i Skopman.

SÅSÄ

Allt gick som planerat, och exakt 09.45 blev det svart i Gästriklands tv-rutor. Den historiska nedräkningen innan släckningen slöttes av Ingemar Lindroth vid huvudsändarstationen i Skopman.

Normalt arbetar två män vid sändarstationen i Skopman; man minkommer 10 oktober såg det anmärks ut. En hel stab tekniker skickas gräbla. Tjänstestjänsterna i beredskap när Gästrikland ställe kända det analoga systemet. Innan nedsläckningen väntade Ingemar Lindroth runt i boiset. - Här får hela sändarstaket plats, säger han och visar på fyra bänkar. Dessutom har vi en i reserv för nyppåläggna.

Mindre och mindre

Han jämför storleken på den gamla TV2 sändaren med de nya, och bara den är större än alla de andra tillsammans. En trappa ner håller Roger...

Roger är inte ett dugg orolig. Alla är väl förberedda och allt har trimmats in.

Superkoll

Klockan närmar sig, och redan en kvart innan nedsläckningen står serviceteknikern Ingemar Lindroth redo vid sin knäpp. Han har arbetat här i 12 år, och det här är en stor förklaringsring i Skopmans historia.

Spänningen har nu antagit proportioner liknande månadensningen 1969, och med jättemellanrum kollar Ingemar på sin klocka. Så är det så dags - poft - svart!

Strax därpå försvinner de grått tröjorna åt olika håll. Nedskåde bland kafflar och skålar jobbar redan Peter Sundberg och Kenneth Nordholm för fullt.

- Vi fixar kanalbyten på två sat, förklarar Peter, medan skruvmejseln drar runt. Teknikerna läser snart ut på fältet för fortsatta jobb vid sändningsstationerna i Anot.



ANTLIGEN! säger tv-ruttarna i Fykesbacken i Kungsgården. Teck var den digitala tekniken kan Nisse Flodin och hans...

Ettor och nollor gav Nisse kanonbild

KUNSGÅRDEN För: otydlig bild, mörka skuggor och olikartad text. Idag: en krisenär tv-bild. - Jag är jättesjukt med digitala...

ut av den tv-skuggan som de tillgångarna befunnit sig i. - Av någon anledning har vi aldrig fått någon riktigt klar signal från masten i den här delen av Kungsgården, har vi än be...

- Jag har haft problem med stora svarta skuggor som frestet bilden. Titta på text-tv har nästan varit osynligt. Texten har varit osynlig. Alla mödica fel...



grannar nu ändligen titta på tv utan att det hoppar och flimrar och rullar...

Nisse kanonbild

senom rastade ned på garrn-taket, berättar en kvinna som bor i området. Digitaltekniken blev till sin lösningen på problemet. Nisse Flodin skändade sig att köpa en digitalbox redan när de första...

Jättesjukt med den digitala tekniken som i går definerat tag över. Inga skuggor - Titta på text - klockrent, säger han och visar om från gamla, osynliga ettan till digitala ettan och får fram en krisenär bild utan...

betala kostnads och dessutom vardig tv-avgift. Vill man se på två olika program eller spela in ett annat program än det man tittar på måste man ha ytterligare en box. Men hellre det än att svära över dålig bild.

Manfred räddade tv-kvällen



SNABT OCH EXAKT. I den stora svarta väskan finns sändningskort som mottar tv-signalerna och får dem att komma på rätt frekvens. Själva arbetet tar knappt en minut för serviceteknikern Manfred Johansson.

KUNSGÅRDEN Det tar en minut och några knapptryck. Sedan har serviceteknikern Manfred Johansson ändrat tv-kanalerna åt alla boende på Ovanåkersgården i Kungsgården.

- Nu är kvällen räddad, skänker han innan han häftar iväg igen.

Ny frekvens Den digitala sändningsaren sattes upp i förväg för att underlätta övergången från analoga till digitala sändningar. Hade det inte varit för att kanalerna bytt frekvenser hade Manfred Johansson slappat äka runt.

- De har bytt från frekvens 46 till 27 som inte var ledig tidigare. På Ovanåkersgården måste man ta sig upp på vinden. Bland bevarande ventilationstrum...

- Nu har jag ändrat inställningarna. Det betyder att alla som bor här på hemmet inte behöver göra någonting med sina tv-apparater. En utvärdering i ett av dagrummen visar att han har rätt. Sändningarna fungerar som de ska.

Arbetsbladet 2005.10.11

Hamnade i centrum när Gotland skrev tv-historia



Digital-premiären utan större problem

TEKNIKERN **Henrik Hagström**, Teracom i Föllingebo, stod i centrum för riks- och lokalmedias intresse - då knappen och sikonet av det andra tv-nätet på Gotland klockan

vid 16-tiden, två timmar tidigare än aviserat. Därmed hade Gotland blivit historiskt såsom först ut i landet att övergå från analog till digital marknadstelevision.

Övergången lyckades också

- Nu kan tv-avgiften användas till mer program i stället för rustiga maskiner, menade utbildnings- och kulturminister **Leif Pagrotsky** (bilden t.h.) på plats i Visby.

SVT1 fortsätter att sända



Gotlands Allehanda

20 September 2005
Telephone +46 (0)498 202500

Entered Centre Stage When Gotland Wrote TV History

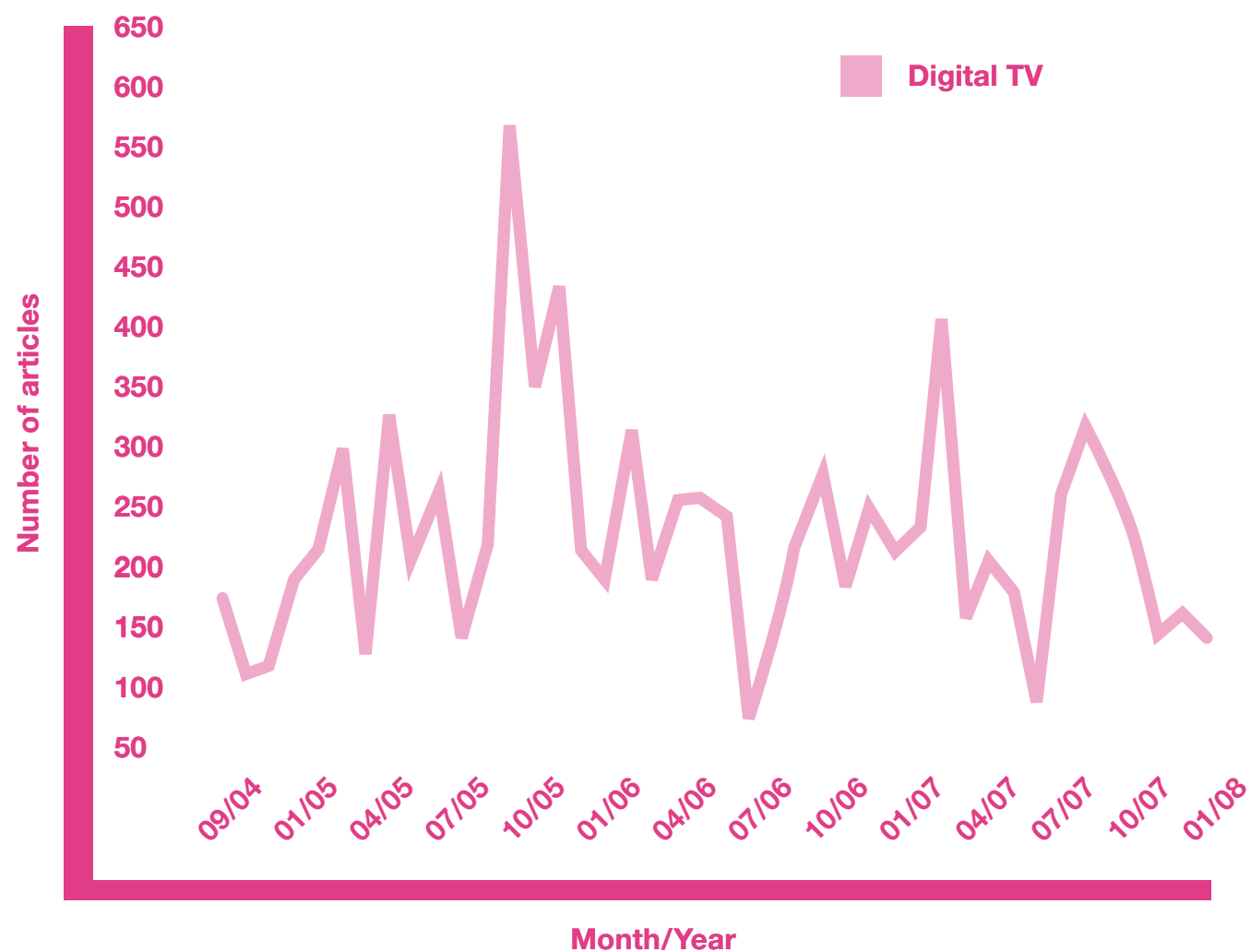
Digital premier with no major hitches

TECHNICIAN **Henrik Hagström** from Teracom in Föllingebo was the centre of local and national media attention as he pressed the button to switch off the analogue TV network on Gotland at a quarter to ten on Monday morning. There was a break in broadcasting until the afternoon when digital broadcasts started around 4 o'clock, 2 hours earlier than anticipated. Gotland will go down in history as being first in the country to make the transition from analogue to digital broadcasting.

The switchover seems to have gone well from both technical and practical points of view for the households that were forced to purchase satellite dishes, digital receivers or broadband TV. "The license fee can now be used to produce more programmes instead of rusty machinery," said Minister for Education and Culture **Leif Pagrotsky** (image to the right) on site in Visby.

SVT1 will continue analogue broadcasts for a couple of weeks to ensure that important information can be broadcast to people who have not yet acquired the necessary equipment to receive digital broadcasting.

Coverage of digital TV by the Swedish media 2004-2008



Mediavision was commissioned by the Swedish Digital TV Commission to describe how the media have covered the switchover in the terrestrial network and how awareness among people age 15-74 evolved during the switchover period. The analysis was descriptive and quantitative, meaning that focus was on the number of articles or broadcast news stories during the five phases of the switchover period. Nearly 8,700 articles or stories were published in the Swedish media during the period that were in some way about or mentioned the digital TV switchover.

The highest number of stories occurred shortly before or in conjunction with the actual switchover date for the various phases. In most cases, one or more TT bulletins were picked up by the national and local media. The highest peak by far in media coverage was in connection with the very first switchover on Gotland, when more than 140 articles/stories were published

in the local and national media. The next most widely covered was the switchover in Stockholm, with almost 100 published articles/stories. The least interest in connection with a switchover was recorded when Värmland and Västerbotten switched to digital TV in autumn 2007 and there were only about 20 articles/stories.

Sample and method

Retriever's media archives and media analysis tools were used for data collection of articles and broadcast stories for the period of 1 January 2005 - 15 December 2007. Articles and stories were grouped by main content in order to determine the kinds of questions that appeared the most frequently in the media. No text analysis was performed. The hits returned using Retriever's analysis tools were not weighted according to the respective medium's reach.

Bjonk! Svart i rutan.

Tänk om det händer just innan vädret, mitt i matchen eller när det är dags för Bolibompa. Nej, usch, hemska tanke! Nu startar övergången till digitala tv-sändningar i marknätet i Motala. Så du som läser det här måste ställa dig frågan:

Är din tv redo?

Tittar du på tv via kabel eller parabol kan du lugnt luta dig tillbaka i soffan. Men om du har vanlig tv-antenn, och vill fortsätta titta på tv med vanlig antenn, behöver du en digitalbox för att det inte ska bli svart i rutan. Med boxen kan du titta på tv precis som vanligt. Skillnaden är att du nu får fler kanaler, bättre bild och ljud. Och inga avbrott i matchen förstås.

Digitaltvövergången

Motala 2005 11 21
0771-10 11 00 www.digitaltvovergangen.se

Poof! Black screen.

Imagine if that were to happen right before the weather, in the middle of a game or when it is time for your child's favourite television programme. What a horrible thought! The switchover to digital terrestrial TV broadcasts in Motala is now starting. So, it is time to ask yourself the following question: Is my TV ready? If you watch television via cable or parabolic aerial, you can sit back and relax. However, if you have a regular television aerial and wish to continue using it, you need a digital receiver. The digital receiver will allow you to watch television as usual. The difference is that you will receive more channels and your sound and picture quality will improve. And, of course, your match will not be interrupted by a black screen.

Är din tv redo?

Digitaltvövergången

Motala 2005 11 21
0771-10 11 00 www.digitaltvovergangen.se



www.digitaltvovergangen.se

Digital tvövergången

Därför går Sverige över till digital-tv

Bestut av Sveriges riksdag
Riksdagen har bestämt att hela Sverige ska gå över till digitala tv-sändningar i marknätet senast i februari 2008.

Foto: Jonas Lindström

Fler kanaler
Med digital-tv får vi samma text, ljud och nya tjänster som till exempel elektronisk programguide och en mer utvecklad text-tv. Men framförallt får hela befolkningen möjlighet att se fler kanaler.

Det nuvarande analoga marknätet är fullt och togs andra kanaler än SVT 1, SVT 2 och TV4 för plats. Samtidigt finns det en stor efterfrågan på ett större utbud. Majoriteten av hushållen har redan skaffat fler kanaler via kabel eller satellit. Idag tar en analog kanal lika stor plats i eteren som fem till sju digitala kanaler tar tillsammans. För att skapa ett större utrymme för många fler kanaler har därför det digitala marknätet efter hand byggts ut.

Får dyrt med två nät
Redan än en fjärdedel av hushållen tittar fortfarande på tv via det analoga marknätet. Men att underhålla två parallella nät, ett gammalt analogt och ett nytt digitalt, är för kostsamt i längden. Därför går vi över till ett gemensamt tv-nät som bygger på modern teknik. Det är helt enkelt dags för ett tekniskt steg.

STÖRRE TEXT HINSKA KONTRAST

MER INFORMATION

- Startida >>
- Kalendarium >>
- Nyheter >>
- Om DigitalTV-kommissionen >>
- Kontakta DigitalTV-kommissionen >>
- Pressmeddelning >>

TESTA OM DU BERÖRS

TILL TESTET

TIPSA EN VÄN

LÄNKAR

LÖRUM

- Costeletuer >>
- Nasutemy >>
- Fatumfure >>

IPSUM

- Costeletuer >>
- Nasutemy >>
- Fatumfure >>
- Costeletuer >>
- Nasutemy >>

STEFENS ÖFFENTLIGA UTREDNINGAR

Information från Digital-tv-kommissionen om Sveriges övergång till digital tv.



PHASE 2

Kisa, Norrköping 2006.02.27

Västerås, Uppsala, Örebro, Östhammar 2006.04.03

Bollnäs, Borlänge, Hudiksvall, Mora 2006.05.02

It had worked: we had the guts to shift into a higher gear. Phase 2 was greater in scope, but the project team did not increase in numbers. The information approach and local presence had worked in Phase 1, but had to be adapted.

162

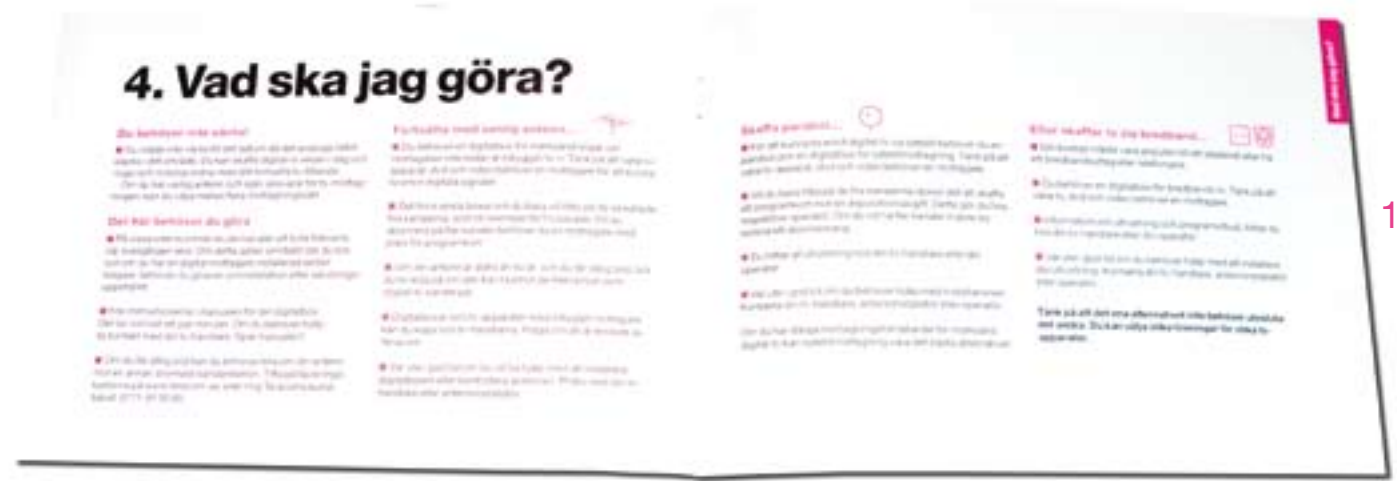
Along with Teracom, SVT and TV4, we organised our local presence as “Digital TV Days.” An information tour of busy shopping centres attracted both citizens and media. The operators were invited as well and TV viewers could see what a SCART cable looks like and compare pay TV packages.



Kisa Boxholm Kinda Linköping Ydre Åtvidaberg **Norrköping** Flen
Katrineholm Nyköping Oxelösund Söderköping Valdermarsvik Vingåker
Uppsala Knivsta **Västerås** Arboga Avesta Enköping Eskilstuna Fagersta
Hallstahammar Heby Kungsör Köping Norberg Sala Skinnskatteberg
Surahammar **Örebro** Degerfors Hallsberg Karlskoga Kumla Laxå
Lindesberg Ljusnarsberg Nora Lekeberg **Östhammar** Norrtälje Tierp
Bollnäs Ljusdal Ovanåker Söderhamn **Borlänge** Falun Gagnef
Hedemora Leksand Ludvika Smedjebacken Säter Vansbro
Hudiksvall Nordanstig **Mora** Malung Orsa Rättvik Älvdalen

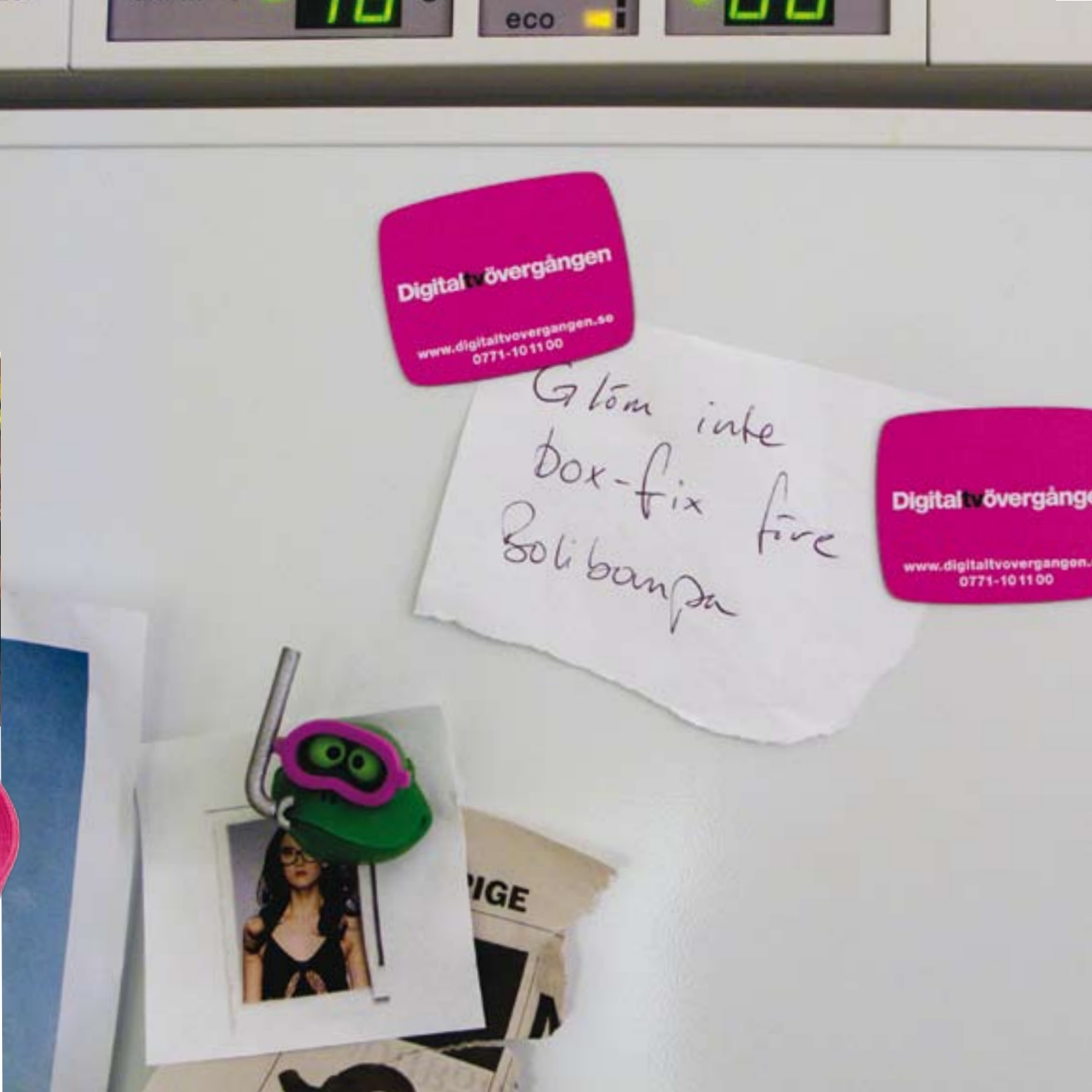


Information från Digital för Samhällets utveckling



The information brochure was distributed to 1,050,000 households in Phase 2

10500000



172

ÖVER- GÅNGEN ÄR NÄRA!

Digitaltvövergången

0771-10 11 00 www.digitaltvovergangen.se

173

Digital-tv-dagar i Söderhamn och Bollnäs den 21 och 22 april!

Nu på fredag och lördag har du chans att rätta ut de sista frågetecknen inför digital-tv-övergången den 2 maj.

Kom till E-center i Söderhamn mellan klockan 11.00 och 17.00 fredag 21 april, eller Brotorget (fd Prixhuset) i Bollnäs lördag 22 april mellan klockan 10.00 och 14.00. Där kan du diskutera kanalutbud, mottagningsförhållanden eller antenneriktning med representanter från Digital-tvkommissionen, Teracom, SVT och TV4.

Digitaltvövergången

www.digitaltvovergangen.se 0771-10 11 00

TEKNIK: Besvärligare att se tv över landgränsen

Mörkt för norrmän som vill se svensk tv

För de norrmän som brukar titta på svensk tv blir hösten mörk.

När det analoga tv-nätet släcks ner i september försvinner svensk tv för de norska hushållen längs gränsen.

Samma sak kommer att inträffa i Sverige när norrmännen får digital-tv.

■ För svenskarna kommer möjligheten att se på norsk tv finnas också efter digital-tv-övergången. Man får helt enkelt koppla ur sin digital-tv-box och titta via det vanliga antennuttaget i den mån man har det kvar.

Den norska medborgare som vill kunna se på svensk tv får dock vackert resa över gränsen och inskaffa en svensk box. Om han eller hon inte ger sig till tåls vill säga.

På sikt kommer nämligen de norrmän som bor

nik där den med ändelsen 4 är en nyare variant.

Den är inte vassare. Att Sverige och de flesta andra länder har valt en mpeg-2-teknik är för att den räcker gott än så länge.

Konsekvensen blir dock att svenska hushåll måste ha en norsk digital-tv-box om man vill se norska kanaler. Men det gäller alltså först när Norge fått digital-tv.

Trots att många är berörda av just det här problemet så har reaktionerna som inkommit till Digital-tv-kommissionen i stort bara handlat om att folk är nöjda med den nya digitala tekniken.

I de områden som har gått över så har en majoritet varit mycket nöjda med hur övergången har skett. Men även vilken kvalitet de har på bilden och att det faktiskt varit så pass okomplicerat, säger Stina



Nya Wermlandstidningen 2007.06.01

Många frågor om digital-tv

Behöver antennen bytas? Vad kostar en digital-box? Hur många kanaler kan jag se? Frågorna var många när "Digital-tv-dagen" kom till Skövde inför nedläggningen av de analoga tv-sändningarna den 6 november.

Övergången från analoga till digitala tv-sändningar i Skaraborgs län startar på torsdag. Om 21 dagar krävs det en digital tv-mottagare (box) för att kunna titta på tv via vanlig antenn. Så långt kommer väg de alla Skövdebor.

Men allmänheten har fortfarande många frågor om övergången och det märks tydligt när det handlar om "Digital-tv-dagen" som till Skövde. Inomhus kommer från den vanliga digital tv-kommissionen, öppna sändningarna, SVT samt några av sändningarna på samtliga marknader. Detta på plats i Maxi-butik och i forumet var stort.

Varför behövs det en digital box till varje tv-apparat? Det är den vanligaste frågan och svaret är att mottagaren är det som krävs för att ta emot sändningen som den ska över till tv:n. Om du har en analog tv-apparat är det som krävs för att ta emot sändningen som den ska över till tv:n. Om du har en analog tv-apparat är det som krävs för att ta emot sändningen som den ska över till tv:n.

Är det någon som inte har en digital box till sin tv? Det är en vanlig fråga och svaret är att mottagaren är det som krävs för att ta emot sändningen som den ska över till tv:n. Om du har en analog tv-apparat är det som krävs för att ta emot sändningen som den ska över till tv:n.

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Stina Sandberg och Ingrid Gustavsson (2) hjälper flera frågor om digital-tv-övergången. Stina Sandberg (3) från digital-tv-kommissionen och SVT:s Catarina Wollert (4) hjälper också till med frågorna.

det att titta ut är över en tv-skärm. Det är en vanlig fråga och svaret är att mottagaren är det som krävs för att ta emot sändningen som den ska över till tv:n.

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Den 6 november slocknar burken

På lördagskvällen den 6 november blir det svart i tv-rutan men senast klockan 18.00 startar sändningarna igen. Under den dagen sker en allmän övergång från analoga till digitala sändningar i Skövde med omnejd.

Projektledare och teknisk ansvarig för övergången till digital tv i Skövde är Sven-Erik Ljunggren, Torstens, i går blev han och sändningschefen Peter Sandberg i Skövde de att ta över ansvaret för övergången.

Vi kommer att använda samma frekvenser till de digitala sändningarna som de analoga har i dag, säger Sven-Erik Ljunggren. Det som redan har gjorts är att digital-tv-mottagare och tv-apparater ska vara redo för den övergången. Det är en viktig del av arbetet som ska göras inför den 6 november.

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Peter Sandberg, sändningschef från Torstens, konstituerar med sin utövning att mottagare förändras är utskickat över Skövde i Skövde.

Skaraborgs Allehanda 2006.10.12

174

175

Färre söker till Högskolan Dalarna

DALARNA

• Ansökningarna till Högskolan Dalarna har minskat med 14 procent på bara ett år. Det skriver högskolan i ett pressmeddelande med anledning av att Verket för högskoleverksamhet, VHS, sammanställt statistik över ansökningar till höstens universitets- och högskoleutbildningar.

Men det finns saker att glädja sig över också, enligt Högskolan Dalarna. Över 200 företag har ansökt om tillstånd till den nya Industriledarhögskolan till exempel. Även det nya programmet digitalbron och e-säkerhet har många företagare intresserade.

Högskolan ser också en fortsatt intresse för sjukvårdens- och lärovetenskapliga utbildningarna.

Men samtidigt fortsätter den nedåtgående trenden för lärovetenskapens matte/teknik. Säger Andrew Cassin, chef för utbildnings- och forskningskansliet.

MARIA SJAMONT

De flesta vill handla hälsosamt

DALARNA

• Spa av tio konsumenter i Dalarna föredrar handla hälsosamt. Samtidigt tycker 36 procent att livsmedelsbutikerna är dåliga på att märka vilken mat som är nyttig. Det visar en Teraundersökning kring föda älskare om hur hälsosamt mat presenteras i butiker.

Ica införde för en tid sedan sina "bollar" – en märkning som talar om hur mycket fett, socker, kalorier och så vidare en viss vara innehåller. Och nu drar Hemköpskedjan i gång en stor hälsosättning med ett grött utropstecken som symbol. Tanken är bland annat att lyfta fram nyckelhälsomärkta produkter och nyttiga recept.

INGEN WALLIN

Vinnare i påskkrysset

Här är vinnarna i tävlingen Påskkryss: Birgit Holmstedt, Fabun, Siv Granh, Fabun, G E Eriksson, Borlänge, Rolf Andersson, Hedemora, Erik Hammarberg, Grängsberg, Siri Hedqvist, Injöv, Inger Eriksson, Sörsjö, Bo Kärrström, Borlänge, Marianne Åkerlund, Hedemora, Lena Andersson, Lud-

Täckningen inte sämre

Första kollen efter digital-tv-övergången visar inga nya problem

DALARNA

Tekniken fungerar som den ska.

Det står Teracom fast efter övergången till digital-tv i Dalarna.

– Vi har hunnit mäta på några ställen och täckningen har inte blivit sämre, säger Lennart Ivarsson, informationschef på Teracom.

– Vår erfarenhet från områden

som gått över tidigare, är att det generellt sett blir något bättre. Många som sett och vant sig vid en halvårig analog bild, får plötsligt klart för sig hur det egentligen ska se ut, berättar han.

I Dalarna finns flera områden där det alltid varit problem att ta emot vanliga tv-sändningar. Skråddarbäcken i Borlänge är en sådant område. Sägmyra och Envikens i Falu kommun och delar av Månging är andra. För tv-timar-

na här har övergången till digital-tv inte inneburit några större förändringar, varken till det bättre eller till det sämre.

Operatören Teracom är just nu rutt med mätbilar och kontrollerar täckningen. Också är det tv-handlare som tipsar om problemområden.

– Men det är också viktigt att allmänheten bör av sig till vår kundtjänst om sådana här problem, säger Lennart Ivarsson.

Han står fast att ambitionen är att täckningen efter övergången ska motsvara den som fanns tidigare.

– Är man inte nöjd finns det en del åtgärder vi kan ta till, säger Lennart Ivarsson.

INGEN WALLIN
0771 91 00 85
ingen.wallin@teracom.se

Fotnot: Teracom och Digital-tv-kommissionen har öppet för frågor, tel: 0771-91 00 85, 0771-10 11 00.



Krångel och kostnader retar Kurt

SÄGMYRA

Här är en som inte uppskattar övergången till digital-tv.

Hos Kurt Hellberg i Sägmyra är det nämligen mest svart i rutan. Trots profthjälp, ny box, ny antenn och alla upplänkliga omställningar.

Kurt Hellberg är upprörd över alla extra kostnader och allt krångel som han upplever an övergången till digital-tv har inneburit.

Men alla kändis inte har, säger Kurt Hellberg.

Sägmyra, där han bor, har alltid varit ett problemområde när det gäller täckningen för tv-sändningar. Men efter att en ny antenn och en ny digital-box kommit på plats, har familjen Hellberg kunnat se digital-tv med bra bild sedan i vintern. Yrkesfolk klarade upp påskret och riktade antennen rätt.

I tisdags, efter frekvensbytet i samband med digital-tv-övergången, blev det problem med

på telefon. Den enda kanal Kurt Hellberg får in är SVT2.

Nu återstår för familjen att ännu en gång betala för att få hem profthjälp.

– Jag skulle gärna kasta ut tv:n i stället, om det bara var jag som bestämde, säger Kurt Hellberg.

Någon större tv-fest är han inte, utan säger sig med att se på SVT1 och SVT2. Därför har Kurt Hellberg valt den enklaste formen av digital-tv, vilket betyder att de inte har samma problem.

gust med täckningen att göra.

– Kan du se SVT2, kan du se SVT1 också. De ligger i samma standard så Teracom's informationschef Lennart Ivarsson och föreslår ny telefontkontakt med Teracom's kundtjänst eller tv-handlaren.

När det gäller synpunkterna på de utgifter som drabbar enskilda i samband med övergången, berättar han till polskerna som be-

– Vad toppen är om det är politiska beslut och göra det bästa av det, säger Lennart Ivarsson.

Ljusnan 3 May 2006

Local newspaper in Dalarna

[Caption under image]:

Mikael Wennberg, shutting down the analogue network with the push of a button. Mikael Hellmyrs is following the events on behalf of Radio Gävleborg.

Analogue network being shut down here for good

Now only possible to see TV2 and TV4 digitally * Analogue broadcasts of TV1 will continue for two more weeks

At exactly 9.45 a.m. on Tuesday, Mikael Wennberg pressed the button that switched off the TV2 analogue transmitter at the station in Arbrå. He took a few steps and repeated the procedure a few seconds later to shut down the TV4 transmitter. D Day, as in digital.

ARBRÅ. Teracom's transmitter station at Kyrkberget in Arbrå was not quite itself on Tuesday.

Mikael Wennberg and Niklas Forslund, who operate the Arbrå transmitter, are normally the only two people there.

Now there were around ten people in the station, all there to ensure that the Arbrå transmitter and its slave transmitter began broadcasting digitally.

Now that Mikael Wennberg has switched off the analogue network for TV1 and TV4, the TV1 transmitter will broadcast for two more weeks. The switchover to digital broadcasting has begun. "I don't feel nervous about this. Naturally, things can go wrong. That is always the case when technology is involved. But we are as well prepared as we can be," says Mikael Wennberg.

Mikael Wennberg was on his way to the slave transmitters in Edsbyn and Voxna to convert them to the digital system.

Digital transmitters have existed at the Arbrå station since 2001, but some adjustments were needed and frequencies from the switched off analogue transmitters needed to be set for the total switchover to be completed. A number of lines needed to be drawn in Arbrå as well.

In addition to the large transmitter in Arbrå, the most recent digital switchover also included the transmitters in Hudiksvall, Borlänge and Mora. "This is the largest area thus far to make the switch to digital on the terrestrial network," says Carina Koch, who is the project manager for information about the digital switchover at Teracom.

Carina Koch believes that this phase of the switchover will comprise around 250,000 households. "We have 25 teams, a total of 60-70 people, who are working on the switchover."

Carina Koch is not particularly worried about anything going wrong with this switchover. "All of the already completed switchovers have functioned well from a technical point of view."

Everything went well this time as well.

Carina Koch was able to report that everything was finished and functioning all over Hälsingland by 4.00 p.m.

By 5.00 p.m., there were only three transmitters in Dalarna that had not been reported as ready.

MORGAN ELIASON
+46 (0)278 275 75
morgan.eliason@ljusnan.se

The novelty has worn off. There was a general election in autumn 2006 in Sweden and we had only one switchover date to deal with. On the other hand, it was a very large area that covered 765,000 households.

- 178 The switchover in the earlier phases had gone so well that there was a risk people would not pay attention. For that reason, we took a new approach with three-metre high advertising pillars located in the middle of the main square, for instance. There was an regular TV antenna at the top and the text “Do you have one of these, too?” sparked response from both the public and the media.



Borås Herrljunga Mark Svenljunga Tranemo Ulricehamn Vårgårda
Bollebygd **Emmaboda** Borgholm Högsby Kalmar Lessebo Mönsterås
Mörbylånga Nybro Torsås Uppvidinge **Finnveden** Gislaved Gnosjö
Halmstad Båstad Hylte Laholm Markaryd **Jönköping** Habo
Nässjö Aneby Eksjö Sävsjö Tranås Vaggeryd Vetlanda **Skövde** Falköping
Gullspång Götene Hjo Mariestad Mullsjö Skara Tibro Tidaholm Töreboda
Vara Ödeshög **Varberg** Falkenberg **Vislanda** Alvesta Ljunby Värnamo
Växjö Älmhult **Västervik** Hultsfred Oskarshamn Vimmerby

The digital TV switchover launched a new medium – mobile advertising pillars.



182

183

www.digitaltvovergangen.se

Just like the brochure, Digital TV Switchover website 2.0 reflected the trend in awareness and knowledge about the shift. The question “Why?” did not need as much space; instead there was now a need for links and information about solutions. “How?” was augmented with broadcast news reports and newsrooms. Material for secondary informers was given its own subpage and the website was given a clearer orientation towards in-depth information and became a hub of the campaign.





Den 6 november går vi över till digitala tv-sändningar. Då är det bra om du är redo. Känns det krångligt kan du alltid fråga Göran, han är redan klar. Eller gå in på vår hemsida, där finns all hjälp du behöver.

Göran på macken har gjort det.

Digitaltvövergången

www.digitaltvovergangen.se 0771-10 11 00

Den 6 november går vi över till digitala tv-sändningar. Då är det bra om du är redo. Känns det krångligt kan du alltid fråga fröken Jansson, hon är redan klar. Eller gå in på vår hemsida, där finns all hjälp du behöver.

Fröken Jansson har gjort det.

Digitaltvövergången

www.digitaltvovergangen.se 0771-10 11 00

3. Övergången är nära

6 november 2006

Etapp 3, det rosa markerade området på kartan, går över till enbart digitala sändningar måndagen den 6 november.

De streckade fälten på kartan till höger markerar områden där tv-signalerna kan komma från mastar som omfattas av övergången i Etapp 3, trots att dessa områden egentligen tillhör en annan etapp. Dessa kallas för gränsområden.

Sveriges marknät utgörs av 54 stormaster och en mängd mindre sändarstationer. En tv-signal tar inte hänsyn till de geografiska gränserna. För dem som bor i gränsområden kan det därför vara lite klurigt att veta vilken sändare som ger bäst signal. Se om du med blotta ögat kan avgöra åt vilket håll din antenn är riktad.

Bor du i ett gränsområde

Det digitala marknätet är nu utbyggt så att det har nästan samma täckning som det analoga nätet. Nära hundra

procent av Sveriges hushåll ska efter övergången kunna ta emot den digitala signalen för åtminstone SVTs kanaler. I de områden där övergången ännu inte skett, sker analoga och digitala sändningar parallellt.

Bor du i ett gränsområde, det som är markerat med rosa streck på kartan, kan du eventuellt fortsätta titta på tv via det analoga nätet ett tag till. Det beror på vilken stormast din antenn är riktad mot. En bra vägledning är de textresor som visas på din tv några veckor före övergången.

Är du osäker kan du kontakta Teracom på 0771-91 00 85 eller gå in på www.teracom.se.

När det analoga nätet släcks

Under dagen som det analoga nätet släcks, kan det bli aktuellt med ett sändningsuppehåll på grund av tekniska justeringar. I så fall kommer du i god tid att få information om vad som gäller från Teracom. Efter övergångsdagen kommer SVT1 att fortsätta sändas analogt i ytterligare två veckor.



PHASE 4
Stockholm 2007.03.12
Ångermanland 2007.04.16
Norra norrland 2007.05.14

Big city information noise.

The winter of 2007 was time for the digital TV switchover in the first true metropolitan region. How could we reach people in all the “information noise,” where many TV viewers believed that they already knew what they needed to know?

192

The “Now it’s our turn” concept was a boost to the entire information campaign and with allusions to local public transport, we drove around in our pink bus and showed boxes and digital reception throughout Stockholm County. The digital TV bus was such a hit that later that spring we kept using it to take us and all the informational materials all the way up to Kiruna and Haparanda.



Stockholm Botkyrka Danderyd Ekerö Haninge Huddinge Håbo Järfälla
Lidingö Nacka Nynäshamn Salem Sigtuna Sollentuna Solna Stockholm
Strängnäs Sundbyberg Södertälje Tyresö Täby Upplandsbro
Upplands Väsby Vallentuna Vaxholm Värmdö Österåker Nykvarn Gnesta
Trosa **Sollefteå** Kramfors **Sundsvall** Härnösand Timrå **Sveg** Härjedalen
Tåsjö Dorotea Strömsund Vilhelmina **Ånge** Bräcke **Örnsköldsvik**
Östersund Berg Krokom Ragunda Åre **Arvidsjaur** Arjeplog Malå Norsjö ¹⁹⁵
Sorsele **Gällivare** Jokkmokk **Kalix** Haparanda **Kiruna Pajala**
Älvsbyn Boden Luleå Piteå **Överkalix** Övertorneå

Nu är det vår tur!

Information från Digital-tv-kommittén.

STADENS ÖFFENTLIGA TV-UTSÄNDNING

Viktig information om din tv.

Varför digital-tv?

My bekant
 Endast Sveriges Radio och Sveriges Television går över till enbart digitala utströmningar senast den 1 februari 2012. I dagsläget har vi både analog och digital utströmning i marknaden. Men ett betydligt större flertal tilltar till HD-kvalitet i program. Det är också ett stort plus för dig som vill se ditt favoritprogram på modern teknik. Eftersom den digitala tekniken ger dig ett större bild- och ljuduttryck i utströmningen. Dessutom innebär övergången att många av Sveriges TV-utströmningar är HD-kvalitet.

Fler kanaler
 Det innebär att du får tillgång till fler digitala utströmningar än vad som tidigare var möjligt. Det innebär att du kan se fler kanaler på din tv. Det innebär också att du kan se fler kanaler på din tv.

Bättre kvalitet
 Med digital-tv är det bättre bild och bättre ljud. Det betyder även att utströmningen är mer stabil och har färre störningar än analog utströmning. Detta innebär att du kan se fler kanaler på din tv.



The bus

A rebuilt public service bus became an unusual carrier of the continued information effort. An exhibition of various types of digital boxes and antennas, connection diagrams and brochures from all providers could straighten out a lot of questions.



Apartment building, Kiruna 2006.11.27 2:30 p.m.



**Fem
dagar
 kvar**

Digitaltvövergången

0771-10 11 00 www.digitaltvovergangen.se

Five days left

**Fyra
dagar
 kvar**

Digitaltvövergången

0771-10 11 00 www.digitaltvovergangen.se

Four days left

**Tre
dagar
 kvar**

Digitaltvövergången

0771-10 11 00 www.digitaltvovergangen.se

Three days left

**Två
dagar
 kvar**

Digitaltvövergången

0771-10 11 00 www.digitaltvovergangen.se

Two days left







SVÄLJ INTE PROPAGANDAN Den kommission som ska planera övergången till digital-tv uppger sig vara opolitisk och oberoende. Det har vi mycket svårt att hålla med om. Informationen snedvrids till fördel för marknätet på ett sätt som ger staten klirr i kassan, hävdar företrädare för tio tv-bolag.

Snedvridet om digital-tv

Riksdagen bestämde år 2003 att Sveriges analoga tv-sändningar i marknätet ska släckas senast den 1 februari 2008. Övergången sker i etapper, och näst på tur att släckas står Stockholm.

För att informera svenskarna om det som sker har man tillsatt en kommission, vars uppgift är att dels planera övergången, dels informera svenskarna om denna.

DIGITAL

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Digital-tv-kommissionen är, enligt egen utsägo, en opolitisk och oberoende myndighet. Något som vi har mycket svårt att hålla med om.

Ända sedan kommissionens start har arbetet fokuserats helt och hållet på att informera svenskarna om. De bör ta emot digital-tv via



Man kan ta emot digital-tv på fyra olika sätt - via parabol, kabel, bredband och marknät, något som inte är helt lätt att förstå när man lyssnar till digital-tv-kommissionen, skriver artikelförfattarna. FOTO: FREDRIK SANDBERG/SCANPIX

nen att ta sitt uppdrag på allvar och inse att det arbete som hittills utförts inte har skötts på det sätt det borde.

Vi uppmanar inte kommissionen att sälja parabol-, bredbands- eller kabellösningen.

Vi uppmanar däremot kommissionen att sluta sälja marknäts- och Boxerlösningen och i stället informera svenskarna på ett sakligt och neutralt sätt om deras olika alternativ, precis som även EU-kommissionens direktiv tydligt anger.

Slutligen vill vi uppmana den nya regeringen, med kulturminister Lena Adelsohn Liljeroth i spetsen, att se över hur informationsarbetet sköts och inse att det allvarligt snedvrider konkurrensen på marknaden.

MARCUS NYLÉN

vd Bredbandsbolaget

PATRIK HOFBAUER

vd Canal Digital Sverige

STEPHAN GUIANCE

vd Fast TV

ANDERS NILSSON

SLUTREPLIK | PRO

Våra åsikter har ett starkt stöd

Ingvar Laxvik och Lennart Hartler är i repliker på SvD Brännpunkt den 8 januari kritiska mot PRO:s ställningstaganden när det gäller förtidspensionärens ålderspension och inkomstskatten 2007.

Vad är det då som PRO säger? PRO anser att de beräkningsgrunder för förtidspensionärens ålderspension som socialdemokraterna, moderaterna, folkpartiet, centerpartiet och kristdemokraterna varit överens om i pensionsöverenskommelsen ska ligga fast och inte försämrats.

PRO anser också att inkomstskatten ska vara lika för förvärvsarbetande och pensionärer vid lika inkomster och att en gemensam skattetabell liksom hittills ska gälla.

Vi anser att grund-

Debate

Editor Sune Olofson
Phone +46 (0)8 13 51 49
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e-mail brannpunkt@svd.se

DON'T SWALLOW THE PROPOGANDA The Commission planning the switchover to digital TV claims to be non-political and independent. We have great difficulty agreeing with the Commission's claim. Information is distorted in order to benefit the Government's finances. **This is what representatives of ten TV companies are claiming.**

Distorted information about digital TV

In 2003, the Riksdag determined that analogue broadcasts on the terrestrial network would cease by 1 February 2008. The switchover is taking place in phases, and Stockholm is next in line.

A commission was appointed to keep Swedes informed of progress. The commission's assignment is to plan the switchover and to provide information.

Digital TV can be received in four ways – via satellite dish, cable, broadband and the terrestrial network. According to the authors of the article, this is not easily ascertainable based on the information provided by the Digital TV Commission.

From the very beginning, the Commission's

efforts have completely focused on informing Swedes that they should receive digital TV via the terrestrial network.

Other companies have had to fight from the start to ensure that Swedes are informed of their available options when their analogue TV signal is shut-down.

Digital TV can be received in four different ways – via satellite dish, cable, broadband and the terrestrial network. The consumer is not easily able to ascertain this information based on the information provided by the Digital TV Commission.

The options have several advantages and disadvantages such as number of TV channels, possibility of HDTV, interactivity, price, possibility of receiving freeview channels without a subscription, etc. These are issues that the consumer currently has no opportunity to learn about and evaluate.

One issue that distorts information to the advantage of the terrestrial network is the fact that Teracom, which has technical responsibility for shutting down the analogue signal and activating the digital one, has such a prominent role in the Commission's information.

Teracom owns Boxer, which has a monopoly on pay-TV subscriptions on the terrestrial network; naturally, the company has informed Swedes that they should purchase receivers in order to receive pay TV from Boxer. Doing so benefits Teracom and thus the Government.

The Commission, most recently in a press release last Friday (12 January), is encouraging Swedes to purchase a set top box that is approved by Tera-com and to ensure that it has a slot for a Smart Card (from Boxer).

To top it off, a former board member of Boxer's holding company has been appointed as principal secretary of the Commission.

And the Commission is supposed to act non-politically and independently?

We demand a change! We want to encourage journalists in Sweden not to swallow the Commission's propaganda. Inform Swedes of their options to the Government's solution for digital TV.

We also urge the Commission to take their assignment seriously and to understand that work has thus far not been properly performed.

We do not urge the Commission to sell parabolic, broadband or cable solutions.

However, we do urge the Commission to stop marketing terrestrial network and Boxer solutions and to inform Swedes of their options in an objective and neutral manner; that is, to inform consumers in the manner clearly stipulated by the EU Commission's directive.

Finally, we would like to urge the new Government, in particular Minister for Culture Lena Adelsohn Liljeroth, to review how information has been distributed and to understand how seriously it has distorted competition in the market.

MARCUS NYLÉN
CEO Bredbandsbolaget
PATRIK HOFBAUER

CEO Canal Digital, Sweden

STEPHAN GUIANCE
CEO Fast TV
ANDERS NILSSON
CEO MTG, Sweden
PER NORMAN
CEO SES Sirius AB
MARTIN CULLBERG
CEO Tele2 Vision AB
ERIK HALLBERG
TeliaSonera
BIRGITTA STÅL
CEO TV8
HASSE BREITHOLZ
CEO TV3 & TV6
ULRIK BENGTTSSON
CEO Viasat, Sweden

PHASE 5
Western Sweden, Västerbotten 2007.09.03
Göteborg 2007.09.24
Skåne, Blekinge 2007.10.15

Last but not least.

Our tireless bus driver Sefa did not abandon us and after more than 18,000 km, we parked the bus in Ystad to inform the public for one last time. Media interest was rekindled and Minister for Culture Lena Adelsohn-Liljeroth pushed the button for the very last time.

More than 4 million households had received the pink brochure, more than 650 transmitter stations had become digital-only and more than 50 Digital TV Days had been held between September 2005 and October 2007.



Filipstad Hällefors Kristinehamn Storfors **Karlstad** Forshaga Grums
Hammarö Kil **Lycksele** Bjurholm Åsele **Skellefteå** **Storuman**
Sunne Arvika Eda Hagfors Munkfors Torsby **Vännäs** Nordmaling
Robertsfors Umeå Vindelns **Bäckefors** Bengtfors Dals Ed Lidköping
Mellerud Säffle Åmål Årjäng **Göteborg** Ale Alingsås Härryda Kungsbacka
Kungälv Lerum Mölndal Partille Stenungsund Tjörn Öckerö
Trollhättan Essunga Grästorps Vänersborg **Uddevalla** Färgelanda Lilla ²¹⁹
Edet Lysekil Munkedal Orust Sotenäs Strömstad Tanum **Helsingborg**
Höganäs Åstorp Ängelholm **Hörby** Bjuv Hässleholm Höör Klippan
Kristianstad Perstorp Simrishamn Sjöbo Skurup Tomelilla Ystad Örkelljunga
Karlshamn Bromölla Olofström Osby Ronneby Sölvesborg Tingsryd
Östra Göinge **Karlskrona** **Malmö** Bjurlöv Eslöv Kävlinge Landskrona
Lomma Lund Svalöv Staffanstorps Svedala Trelleborg Vellinge

Världen följer Sveriges tv-omläggning

Den svenska modellen har väckt stort intresse i flera länder.

Sverige har blivit ett föregångsland när det gäller digitaliseringen av tv-nätet. Länder från hela världen står på kö för att få veta mer om den svenska modellen.

Digitaliseringen av det svenska marknätet för tv-sändningar är snart genomförd. Den 15 oktober släcks de sista analoga signalerna för gott i och med att Skåne blir digitaliserat.

Enligt Digital-tv-kommissionen, den myndighet som haft till uppgift att övervaka och under-

lätta teknikskiftet, har övergången varit mycket framgångsrik.

Väckt stort intresse

Den svenska modellen har väckt stort intresse i andra länder som står i begrepp att digitalisera sina nät. I somras var parlamentsledamöter från Storbritannien på besök i Sverige, i torsdags kom en stor delegation från Frankrike hit.

Den här veckan anländer en grupp från Sydafrika och även Sydkorea har visat intresse. Och Digital-tv-kommissionen tvingades säga nej till en förfrågan från Danmark om att få vara med i

Hörby när tv-sändaren där, som den sista i landet, blir helt digital.

Marknätet är grundstommen för tv-mottagningen i hela världen och överallt går man mot en digitalisering av det nätet nu. Sverige var, vid sidan av Tyskland, det första land som satte en deadline för när digitaliseringen skulle vara genomförd.

Andra är mer försiktiga

– Väldigt många länder i världen är mer försiktiga. Man väntar, analyserar, kartlägger. Men vår erfarenhet säger oss att man inte kan vänta på att tekniken

ska vara perfekt eller att det ska finnas tillräckligt många boxar. Man måste sätta bollen i rullning för att behov och efterfrågan ska uppstå, säger Digital-tv-kommissionens huvudsekreterare **Stina Sandell**.

Vill låna knallrosa buss

Det är framförallt det svenska greppet med en neutral kommission som har till uppgift att informera alla på bred front, med hjälp av annonser och turnerande informationsbussar, som har väckt intresse utomlands.

– Engelsmännen har till och med frågat om de får låna vår idé

med en knallrosa buss som åker omkring i landet för att informera. Och fransmännen tror inte på oss när vi berättar hur lite pengar vi spenderat på informationsarbetet. Med väldigt små medel, cirka tio kronor per hushåll, har vi lyckats nå väldigt många till exempel genom broschyrer, annonser och bussar.

Text:

Ulf Clarén

ulf.claren@sydsvenskan.se



FAKTA

Många digitaliserar inom några år

- Finland genomförde hela sin digitalisering på en enda dag, den 31 augusti.
- Danmark har som mål att vara digitaliserat år 2009.
- Storbritannien har skjutit på sitt datum två gånger. Nu siktar man på att ha släckt det analoga nätet år 2012.
- Norge har också skjutit på det. De börjar släcka det analoga nätet i höst och ska vara klara om två till tre år.
- Frankrike har sänt analogt och digitalt parallellt sedan år 2005 och börjar släcka sitt analoga nät nästa år. De siktar på att vara klara år 2009.
- USA har påbörjat sin digitalisering och ska vara klara år 2009–2010.
- Kina ska vara klart år 2009.
- Sydkorea har skjutit på sitt slutdatum, de ska vara helt digitaliserade år 2011.



MARTIN JÖNSSON

Siste man släcker det analoga nätet

Så var det klart: I dag blir Sveriges tv-nät helt och hållet digitaliserat. Och det var tittarna som fick betala notan.

På morgonen i dag samlas tv-måttavarna i Sverige på sändarstationen i lilla Sallerup, söder om skånska Hörby, för att en gång för alla säga adjö till det analoga tv-nätet. I sällskap med kulturminister Lena Adelsohn Liljeroth ska de övervaka när Skåne och Blekinge insliter sig till det digitala marknätet.

Den lilla ceremonin innebär slutet på en process som inleddes den 19 september 2005 på Gotland. Fast egentligen togs de viktiga besluten

Var femte svensk har, region efter region, lydigt och snällt införskaffat en digitalbox, ett Boxer-abbonnemanng eller ett satellitpaket.

långt tidigare: dels 1999 med regeringens proposition om att etablera det digitala marknätet, dels 2001 med beslutet att släcka ned det analoga marknätet senast i oktober 2007 (en tidsplan som alltså hålls, med bara tre veckors avvikelser).

När regeringen lade fram sitt förslag fanns det gott om motstånd mot processen bland de borgerliga partierna. Det är

dock inget som det får talas högt om i Sallerup: nu beskriver även alliansregeringen projektet som en succé.

Men om man ska sammanfatta hur nedläckningsarbetet gått finns det i princip bara två positiva saker att lyfta fram: rent tekniskt har det gått smidigt på fraktionsfritt och informationsen har varit föredömlig. Digital-tv-kommissionen har visserligen fått god hjälp från elektronikhandeln, men få har kunnat förstå att nedläckningen kom som en chock.

Var femte svensk har, region efter region, lydigt och snällt införskaffat en digitalbox, ett Boxer-abbonnemanng eller ett satellitpaket. För alla har det inneburit en fördyning av tv-tittandet: en marginal så liten som man bara väljer frikanalerna, en mer påtaglig sådan om man - vilket majoriteten gjort - valt att utöka med fler kanaler. Gotlänningen Thomas Munck, som intervjuades av SvD kort före nedläckningen där, sammanfattade det hela perfekt: "Det här kommer bara att bli dyrt".

Dyrt - men bättre? Tanken var att det skulle bli påtagligt så: bättre bild, bättre utbud, fler tilläggstjänster och billigare sändningar för tv-bolagen, vilket skulle frigöra resurser för bättre program. Och den största fördelen av alla var att det frigjorde frekvensutrymmet i nätet skulle möjliggöra nya mediesatsningar.

Långt ifrån alla dessa visioner har slagit in.

25%

Så mycket har SVT:s tittarsidan del minskat sedan riksdagen tog beslutet om att släcka ned det analoga marknätet.

Övergångsdatum

21 maj 2012

12 april 2012

1 september 2012

Digital tv-övergången

Här du hittar? Ring 0771 10 11 00 eller besök www.digitaltvovergangen.se

Snart är det din tur!

Tre alternativ

Om du vill använda gamla
Du vill fortsätta använda digital tv-övergången som du är van vid idag. Du kan fortsätta använda digital tv-övergången för vidare övergång. Ta med dig gamla tv, och ett nytt tv-övergångsmodul.

Om du vill använda nytt tv
Du vill fortsätta använda digital tv-övergången som du är van vid idag. Du kan fortsätta använda digital tv-övergången för vidare övergång. Ta med dig gamla tv, och ett nytt tv-övergångsmodul.

Om du vill använda ett nytt tv
Du vill fortsätta använda digital tv-övergången som du är van vid idag. Du kan fortsätta använda digital tv-övergången för vidare övergång. Ta med dig gamla tv, och ett nytt tv-övergångsmodul.

222

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Varför digital-tv?

My tv
Om du vill fortsätta använda digital tv-övergången som du är van vid idag. Du kan fortsätta använda digital tv-övergången för vidare övergång. Ta med dig gamla tv, och ett nytt tv-övergångsmodul.

Min tv
Du vill fortsätta använda digital tv-övergången som du är van vid idag. Du kan fortsätta använda digital tv-övergången för vidare övergång. Ta med dig gamla tv, och ett nytt tv-övergångsmodul.

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Vad ska jag göra?

Min tv
Du vill fortsätta använda digital tv-övergången som du är van vid idag. Du kan fortsätta använda digital tv-övergången för vidare övergång. Ta med dig gamla tv, och ett nytt tv-övergångsmodul.

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Digital-tv-dagarna

Om du vill fortsätta använda digital tv-övergången som du är van vid idag. Du kan fortsätta använda digital tv-övergången för vidare övergång. Ta med dig gamla tv, och ett nytt tv-övergångsmodul.

Övergångsdatum

För fullt övergång och frångående av analogt tv, börjar övergången för alla tv-kanaler till digitalt tv i slutet av 2012. För de som inte har digitalt tv, börjar övergången till digitalt tv i slutet av 2012. Detta innebär att analogt tv inte längre kommer att fungera efter den 17:e november 2012.



17 november 2012

17 november 2012

17 november 2012

Digital tv-övergången

Var du rädd? Ring 0770 11 11 30 eller besök www.digitaltvovergangen.se

Halloj, det är din tur.



Vad ska jag göra?

Om du har tv

Om du har tv som inte är digitalt, bör du byta till digitalt tv. Detta innebär att du måste byta till digitalt tv och eventuellt även byta till digitalt tv-utrustning. Detta innebär att du måste byta till digitalt tv och eventuellt även byta till digitalt tv-utrustning. Detta innebär att du måste byta till digitalt tv och eventuellt även byta till digitalt tv-utrustning.

Om du inte har tv

Om du inte har tv, bör du överväga att köpa ett digitalt tv. Detta innebär att du måste köpa ett digitalt tv och eventuellt även byta till digitalt tv-utrustning. Detta innebär att du måste köpa ett digitalt tv och eventuellt även byta till digitalt tv-utrustning.

Digital-tv-dagarna

Om du vill se digitalt tv, bör du se till att du har rätt utrustning. Detta innebär att du måste ha rätt utrustning för att kunna se digitalt tv. Detta innebär att du måste ha rätt utrustning för att kunna se digitalt tv.

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Varför digital-tv?

Om du vill se digitalt tv, bör du se till att du har rätt utrustning. Detta innebär att du måste ha rätt utrustning för att kunna se digitalt tv. Detta innebär att du måste ha rätt utrustning för att kunna se digitalt tv.

Om du vill se digitalt tv

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Tre alternativ

Om du vill se digitalt tv

Om du vill se digitalt tv, bör du se till att du har rätt utrustning. Detta innebär att du måste ha rätt utrustning för att kunna se digitalt tv. Detta innebär att du måste ha rätt utrustning för att kunna se digitalt tv.

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Hörby 2007.10.15 9:05 a.m.



Attachments

- 1 Committee terms of reference
- 2 Members and Experts in the Digital TV Commission
- 3 The Digital TV commissions proposal for switchover plan
- 4 Commission's proposal for the switchover plan
- 5 Decision of the Government regarding the switchover plan June 2005 – map
- 6 Teracom's build-out of the digital terrestrial network – MUX build-out
- 7 **Municipal checklist and step-by-step guide.**
- 8 Documentation of workshop 2006-06-02.
- 9 Digital TV Switchover Help Telephone – statistics
- 10 Statistics from Branschkansliets Marknadsinformation AB
- 11 International overview

Committee terms of reference

Commission on the switchover to digital terrestrial broadcasting



Dir.
2004:32

Cabinet meeting resolution, 11 March 2004.

Summary of the assignment

The commission shall prepare the switchover from analogue to digital terrestrial broadcasting as well as coordinate necessary information. Consideration will primarily be taken of consumer wishes and needs. The commission will maintain close contact with organisations that represent various consumer groups as well as authorities and organisations that are affected by the change.

The commission shall have the following tasks. It shall

- present a plan for when analogue broadcasts will cease in various areas,
- consider if shutting down analogue terrestrial broadcasts on a trial basis in a limited area is an appropriate option,
- monitor expansion of digital terrestrial broadcasts,
- monitor development of the digital TV market,
- plan and coordinate information to the public about the switchover,
- consider what information will be needed as a result of new legislation related to the obligation to rebroadcast certain TV programmes on electronic communication networks.

2

The commission shall present a plan for discontinuing analogue broadcasts as soon as possible after the Riksdag passes a resolution based on the Government bill on digital TV broadcasts (prop. 2003/04:118). The commission shall submit an account of its activities every year by the end of February. A final report will be submitted by the end of March 2008.

The Riksdag's resolution on digital TV broadcasts, etc.

On 28 May 2003, the Riksdag resolved that digital TV broadcasts should be expanded and that analogue TV broadcasts should cease after a switchover period (prop. 2002/03:72, bet. 2002/03:KU33, rskr. 2002/03:196). Analogue TV broadcasts will be discontinued by stages. Discontinuation shall not commence before legislation on the obligation to rebroadcast certain TV programmes over cable networks has been adapted to a situation where all terrestrial broadcasts are digital. Analogue broadcasts shall have completely ceased by 1 February 2008.

The Government passed a Government bill on digital TV broadcasts (prop. 2003/04:118). The bill proposes that digital terrestrial broadcasts from Sveriges Television AB and Sveriges Utbildningsradio AB shall have the same coverage as the companies' current analogue terrestrial broadcasts. At least 98 per cent of the population should be able to receive digital terrestrial broadcasts from at least one more frequency channel.

The commission's assignment

Analogue broadcasts have existed since television's infancy in the 1950s, and can no longer be further developed. Digital TV broadcasts will offer consumers simple and reliable TV distribution in the future. At the same time, conditions are created for continued development of public service television's programme range on existing and new TV channels. Commercial TV channels also become accessible to more people.

The switchover from analogue to digital broadcasting technology entails an adjustment for most consumers. In order for adjustment to be made as smoothly as possible, it is

important to focus on consumer needs and interests. Based on the perspective of consumers, the commission's task is, among other things, to plan how the adjustment should take place, monitor expansion of digital broadcasts, monitor development on the digital TV market and coordinate information to the public about the adjustment. The various tasks will be described in more detail below.

Plan how the adjustment should take place

Points of departure

According to a parliamentary resolution, analogue terrestrial broadcasts will be discontinued by stages. Analogue broadcasts shall have completely ceased by 1 February 2008.

The expansion of digital broadcast networks began in densely populated areas of the country. Digital terrestrial broadcasts currently reach around 90 per cent of the population. The Government's proposal in the bill on digital TV broadcasts (prop. 2003/04:118) entails at least two transmitter networks being expanded so that 98 per cent of the population can receive broadcasts in their permanent residences. The proposal involves the range of public service company broadcasts increasing additionally as a result of small broadcasting stations being converted from analogue to digital usage. This will enable households that currently receive Sveriges Television's and Sveriges Utbildningsradio's analogue broadcasts to receive the two companies' digital broadcasts when analogue broadcasts have ceased.

In a written communication to the Government, Teracom AB proposed a schedule for continued expansion of the digital TV network as well as for discontinuing analogue TV broadcasts. According to the proposal, the expansion of two digital transmitter networks to 98 per cent coverage should be implemented in 2004. Conversion of small broadcasting stations from analogue to digital broadcasting should take place to allow discontinuation to be done in stages between 2005 and

2008. According to the example of stages that Teracom submitted in the communication, the analogue terrestrial broadcasts would first cease in Norrland.

As stated in the parliamentary resolution, discontinuation shall not commence before legislation on the obligation to rebroadcast certain TV programmes over cable networks has been adjusted so that all terrestrial broadcasts are digital. In the report called Must Carry (SOU 2003:109), the commission of inquiry into the Radio and Television Act (KU 2000:01) submitted a proposal for legislative amendments to ensure access to a basic range of TV programmes when analogue terrestrial broadcasts have ceased. The public consultation of the report was recently concluded and draft legislation is being prepared at the Government Offices. The Government believes that the modified legislation will come into force in 2005.

Proposals for shutting down analogue terrestrial broadcasts on a trial basis in a limited area before the real discontinuation begins have been forwarded. The aim of a trial shut-down of this kind is to obtain practical experience of public need in terms of information and service when analogue broadcasts cease.

The task

The commission shall present a plan for when analogue broadcasts will cease in various areas. When producing the plan, the commission shall primarily consider the needs and wishes of consumers. Various technical requirements and expansion of digital broadcasting networks must naturally be taken into consideration.

The commission shall also consider if shutting down analogue terrestrial broadcasts on a trial basis in a limited area is an appropriate option. If the commission believes that a trial of this kind should be implemented, it will put forward a proposal for appropriate areas as well as other requirements for the trial.

Monitor the expansion of digital broadcasts

Background

According to the Government's proposal in the bill on digital TV broadcasts (prop. 2003/04:118), the range for digital terrestrial broadcasts should increase from 90 to 98 per cent of the population as a result of digital broadcasts on at least two frequency channels being introduced to the locations where large broadcasting stations currently only broadcast using analogue technology. These locations are Arvidsjaur, Bäckeå, Filipstad, Finnveden, Gällivare, Lycksele, Pajala, Sollefteå, Storuman, Sunne, Sveg, Tåsjö, Ånge and Överkalix. A number of small broadcasting stations also need to be digitalised in order to improve opportunities for reception within the areas covered by the large broadcasting stations.

The Government also proposes that digital terrestrial broadcasts of Sveriges Television's and Sveriges Utbildningsradio's TV programmes maintain the same coverage that the companies' analogue broadcasts currently have by converting analogue broadcasts to digital broadcasts at small broadcasting stations that lie outside the range of the large broadcasting stations. This means that around 99.8 per cent of the population will be able to receive the programmes.

The task

The commission shall continuously monitor the expansion of digital terrestrial broadcasts as well as the conversion of small broadcasting stations.

Monitor development of the digital TV market

Background

Special decoders will be needed in order for digital TV broadcasts to be received. The decoder can be an additional

device for the TV receiver, what is known as a set-top box, or be built into the TV receiver itself.

Thus far, digitally broadcast TV programmes have generally been provided through subscriptions. Digital TV receivers are often sold at a low price to programme package subscribers.

As an alternative to subscribing to encrypted programme services that incur a charge, households can opt only to receive unencrypted broadcasts that do not incur a charge. All of Sveriges Television's and Sveriges Utbildningsradio's programmes are currently broadcast unencrypted on the digital terrestrial network, as is TV 4's main channel.

An independent and competitive market for various types of digital receivers has emerged in the United Kingdom and Germany. Prices for equipment have drastically dropped. It is important that receivers with performance adapted to the wishes of various consumer groups reach the Swedish market. There is a need for both simple and more advanced receivers that can, for example, manage various programmes at the same time that they are marketed at low prices. It is important that equipment manufacturers also take consumers into consideration who, due to functional disabilities for example, may have difficulty using new household electronics.

It is also important that subscriptions to digital programme services are designed to enable adaptation to various consumer needs. This can apply, for example, to subscription periods, the opportunity to gain access to additional or fewer programme services as well as the situation faced by households with more than one residence or TV receiver.

The task

The commission shall monitor development of consumer products for receiving digital TV. This applies to technical solutions that emerge as well as competition among producers and suppliers of receiver equipment and price development of various types of receivers. The commission shall also monitor how different ways of providing digital programme services develop in terms of consumer needs as well as contribute to

special consumer needs being channelled to the players who develop products and services. The commission shall also monitor how public acquisition of receiver equipment develops.

Information to the general public regarding the switchover

Background

The television is one of our most important mass medias and something which is used by basically everyone in our society. The switchover from analogue to digital broadcasting is thus an important issue for consumers.

It is necessary that everyone receive information about the switchover as well as what they need to do in order to receive television with the new technology. The information needs to take into consideration the fact that different consumers have different needs based, for example, on their residence or number of TV receivers. Special consideration needs to be taken of individuals who for different reasons may have difficulty receiving information about the change.

Special services and information are also required for households that will not have access to parallel broadcasting during the switchover. Technical prerequisites also need to be created in order for technical equipment to be installed and tested before the switchover, for example by broadcasting test images with digital technology.

Different players will have reason to distribute information about the upcoming change. This applies, for example, to programme companies, programme distributors and companies that market receiver equipment. Organisations that represent various consumer groups also need to inform their members. Individuals who require special types of information such as the elderly, individuals with functional disabilities and individuals who have limited knowledge of Swedish may benefit if the organisations that represent these consumers are consulted before information is provided.

Companies that supply home electronics offer regular telephone consultation to customers who need it. The need for this type of service may increase as a result of most households needing to acquire equipment for digital TV reception.

The Riksdag's resolution allows consumers ample time to acquire equipment for digital TV reception. This means that the need for individual guidance and service can be spread out over a greater period of time.

One specific question is related to how property that is connected to cable will be affected by the switchover. As previously mentioned, the commission of inquiry into the Radio and Television Act submitted a proposal regarding legislative amendments in order to ensure access to a basic range of TV programmes when analogue terrestrial broadcasts have ceased. The public consultation of the report has been concluded, and draft legislation is being prepared at the Government Offices.

The task

The commission shall plan and coordinate information to the public regarding the switchover as well as act to ensure that affected companies offer service by phone as well as other assistance related to using digital receiver equipment. In this context, the commission shall ascertain what type of information the various players are planning. When necessary, the commission shall initiate cooperation between the different providers of information as well as ensure that needs for information are met. When planning its work, the commission should take advantage of other countries' experiences.

The commission shall monitor work related to legislation on rebroadcasting certain TV programmes in electronic communication networks as well as consider what information may be needed as a result of new legislation.

Working methods and presentation

The commission shall work in close contact with the organisations that represent different consumer groups such as

elderly and functionally disabled consumers. The commission shall also maintain ongoing contact with the authorities, companies and organisations that are affected by the switchover. Political parties shall also be given appropriate insight into the commission's work. The commission may set up one or more reference groups in order to facilitate contacts.

The commission shall present a plan for discontinuing analogue broadcasts as soon as possible after the Riksdag passes a resolution based on the Government bill on digital TV broadcasts (prop. 2003/04:118). The plan shall be submitted to the Government. If the commission deems that a trial shutdown of analogue broadcasts in a limited area should be carried out, it shall forward a proposal regarding this to the Government.

The commission shall submit an account of its activities to the Government every year by the end of February. A final report will be submitted to the Government by the end of March 2008. If the commission deems measures to be necessary that require the Government to take a position, it can submit a proposal for such measures.

(Ministry of Culture)

2. Members and Experts in the Digital TV Commission

Members

Anders Sundström (<i>Chairman</i>)	2004-03-17—2004-08-18
Lorentz Andersson (<i>Chairman</i>)	2004-08-19—2008-03-31
Karin Lindell	2004-03-17—2006-06-30
Anders Ljunggren	2004-03-17—2006-06-25
Anna Serner	2004-03-17—2008-03-31
Perc Brodén	2004-03-17—2008-03-31
Agneta Broberg	2006-06-26—2008-03-31
Mojdeh Zandieh	2006-06-26—2008-03-31

Experts

Peter Schierbeck	2004-03-17—2008-03-31
Roger Suup	2004-03-17—2008-03-31
Filippa Arvas Olsson	2004-03-17—2008-03-31
Lars Marén	2004-03-17—2008-03-31
Marie Jeanette Axélius	2004-03-17—2005-09-19
Anna Wibom	2004-03-17—2004-08-15
Ingolf Berg	2005-05-30—2005-11-06
Karin Sjöberg	2004-08-16—2005-05-01
Nils Hertzberg	2005-09-20—2006-02-13
Jesper Svarén	2005-11-07—2006-11-05
Lena Carlsson	2006-04-10—2008-03-31
	2006-11-06—2008-03-31

The Administrative office

Principal Secretary Pierre Helsén	2004-04-15—2007-06-30
Principal Secretary/Communications Officer Stina Sandell	2004-07-01—2008-03-31
Commission Secretary Malin Wallin	2004-08-09—2008-01-31
Communications officer Anders Bjers	2004-06-07—2007-03-31
Press officer Gustaf Brusewitz (consultant, fulltime during periods)	2005-04-25 - 2008-02-29
Webmaster Sarah Pålval	2006-03-13—2006-09-30

3. The Digital TV Commission



20 April 2005 25/05

Digital TV Commission

Ku 2004:04

Chairman Lorentz Andersson

Principal Secretary Pierre Helsén

Ministry of Education, Research and
Culture, Division for Media

The Digital TV Commission's switchover plan for continued switchover from analogue to digital terrestrial television in Sweden

The Digital TV Commission proposes that analogue TV broadcasts be switched off according to the plan outlined in [Appendix 1](#) to this communication.

It is the Commission's opinion that an evaluation of the experiences from phase 1 should be performed on an ongoing basis to enable the switchover to continue without pause and to continue during 2006.

The plan was produced in collaboration with Teracom AB (Teracom). In addition, Sveriges Television AB (SVT), Utbildningsradion AB (UR) and TV4 AB (TV4) have been consulted on an ongoing basis.

In order to keep to the schedule, necessary decisions should be made by the Government by the end of May 2005.

Background

About the Digital TV Commission's assignment

The Riksdag has decided (prop. 2002/03:72, bet. 2002/03:KU33, rskr. 2002/03:196 and prop. 2003/04:118, bet. 2003/04:KU24, rskr. 2003/04:231) that digital TV broadcasts shall be expanded and that analogue TV broadcasts shall cease. Analogue broadcasts shall be switched off in phases, and shall be completely switched off by 1 February 2008. Digital broadcasting networks shall be expanded to enable basically everyone in Sweden to receive the public service companies' digital broadcasts from

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terrestrial transmitters. At least one more digital transmitter network should be expanded to cover 98 per cent of the population.

The Digital TV Commission (Ku 2004: 04, dir. 2004:32) has been assigned with monitoring the expansion of digital terrestrial broadcasting and to produce a plan for switching off analogue broadcasting in different areas. The Commission has also been assigned with planning and coordinating information to the public regarding the switchover to digital broadcasting on the terrestrial network.

About phase 1

On 27 September 2004, the Digital TV Commission presented its proposal for the first phase of the switchover, which included the Motala/Linköping, Gävle and Gotland service areas. The choice of service areas was primarily made in consultation with Teracom. The aim of the first phase was not to perform a pilot; rather, the aim was to introduce the switchover to a limited area to enable the Commission to learn from the process in terms of technology and communication. Geographic and demographic variables were taken into consideration as was willingness on the part of the different municipalities.

On 22 December 2004, the Government decided that the Motala, Gävle and Gotland service areas should switch over to digital broadcasting between 1 September and 13 December 2005. Decisions regarding the exact dates for switching off analogue broadcasting in each of the areas were left to the broadcasters SVT, UR and TV4. After consulting with the Commission, the broadcasters decided that analogue broadcasting should gradually cease in the different service areas. All of the analogue channels will be switched off on Gotland on 19 September 2005. Analogue broadcasting in Gävle of TV4 and SVT2 will be switched off on 10 October 2005, and SVT1 will be switched off on 24 October 2005. Analogue broadcasts in Motala of SVT1 and SVT2 will be switched off on 21 November 2005, and TV4 will be switched off on 5 December 2005. Information text will be displayed during a transition period after analogue broadcasts have ceased. The text will provide information regarding what has happened, and viewers will be referred to teletext and the Internet for further information.

The Digital TV Commission's work and preparations for phase 1 have been ongoing since autumn 2004. These efforts have contributed to an improved knowledge base for both the Commission and other stakeholders. The Commission learned that information about phase 1 was insufficient and/or came too late. The Commission's information has primarily been delayed because the Government resolution on phase 1 was not reached until 22 December 2004. Primarily based on the criticism it received, the

Commission emphasises the importance of decisions being made well in advance of future phases to enable information initiatives to get started as soon as possible.

Prerequisites for the continued switchover

A great deal of the experience that was gained during phase 1 is unique from several points of view. Phase 1 deviates from future phases in that only a limited number of municipalities and inhabitants are affected. However, such a large number of inhabitants and municipalities will be affected in the continued switchover that it is not possible to take the wishes of individual municipalities into consideration when organising the phases. Neither will the Commission be able to collaborate with municipalities to the same active and locally adapted extent in terms of disseminating information that was possible during phase 1. Rather, the Commission hopes that the municipalities that were included in phase 1 will be able to help provide information and support to and share their know-how with the municipalities included in the coming phases of the switchover. It is already apparent that the efforts required of the municipalities will continue into the future as well. The Commission also believes that media coverage will change in the future. Before phase 1, distributing information was a central element of the Commission's media work. Media coverage has also been of national interest because of the novelty of the first phase. Media coverage is expected to become increasingly local and to emphasise consumer issues more when leading up to future phases.

According to the Riksdag's decision, digital terrestrial broadcasts from SVT and UR must have the same coverage as the company's current analogue terrestrial broadcasts (99.8 per cent) before analogue broadcasts cease. Thus when expanding its digital terrestrial network, Teracom has prioritised the transmitters included in phase 1. Teracom's aim is for the digital terrestrial network in phase 1 to have achieved the level of coverage that currently corresponds to the analogue terrestrial network by 15 June 2005. Teracom will also continue to prioritise expansion in the areas next in line for terrestrial digital TV. Doing so will enable the residents in each phase to access digital TV broadcasts to the greatest extent possible before analogue broadcasts cease in the area.

The decision to switch off analogue terrestrial broadcasts has led to an increased level of awareness on the part of the general public in terms of what digitalisation means. All of the terrestrial broadcasting, cable broadcasting and satellite broadcasting operators now include the concept of "digital" in their marketing. Competition for consumers is stiffer, and the number of offerings from all of the distribution platforms has increased. Set-top box prices have also continued to decrease. Development is expected to

continue since several large producers such as Philips will be making extensive launches in summer 2005. Operating on a large-scale basis allows these producers to compete with their prices. Among other things, launches include TV sets with a built in set-top box. Simple set-top boxes have thus far not been offered to any great extent (that is, set-top boxes without a card slot and that only receive freeview TV). This is probably the result of retailers preferring to sell set-top boxes that have been tested by Teracom for the Swedish market. The high fees that are charged to test set-top boxes at Teracom limit the number of players that are able to do so. At the same time, simple set-top boxes are gaining an increasing amount of attention in the mass media, and demand is expected to put a great deal of pressure on retailers and distributors to include these types of set-top boxes in their range.

The mass media's attention has benefited the Commission's work in that issues related to digital TV have been highlighted. However, one effect of the attention has been that basically all digitalisation is associated with the terrestrial network's switchover; many consumers believe they will be affected by the switchover despite the fact that they are not directly dependent upon the terrestrial network. Other platform operators have also to an increasing extent questioned the Commission's neutrality and have said they wish to be a part of the information process alongside Teracom, SVT and TV4.

When to submit the plan

In its proposal for phase 1, the Commission stressed that a plan for the continued switchover should be submitted in conjunction with the commencement of phase 1. The Commission has already submitted its proposal for the switchover plan because it believes that submitting the proposal early will create the positive conditions necessary for planning the switchover. The Commission's position is supported by SVT, TV4 and Teracom as well as the retail chains with which the Commission has been in contact. Everyone involved has emphasised the importance of a quick decision for the continued switchover's schedule.

In order for planning to stay on track so that the switchover can be completed by 1 February 2008, the Government needs to make necessary decisions soon regarding how the switchover should proceed and under what circumstances.

Consultation with stakeholders

When performing the assignment, the Digital TV Commission shall take consumer wishes and needs into consideration, as well as stay in close contact with organisations that are affected by the change.

The Commission produced a proposal for the switchover plan in close collaboration with Teracom, both in terms of the number of phases and the organisation of each phase. SVT and TV4 have been consulted about the proposal on an ongoing basis. To the extent possible, the Commission has taken the viewpoints of consumers, retailers and producers into consideration.

Number of phases in the switchover

The Commission's proposal: The switchover should progress continuously, and the next phase should be scheduled for spring 2006, bringing the total to five.

The different options

The Digital TV Commission has considered how many phases the continued switchover should include. From the point of view of communication, implementation should preferably avoid summer and holiday periods since it is more difficult to reach consumers with information about the switchover during those periods. From the point of view of consumers, it is also preferable to avoid cold winter periods since roof aerials may need to be adjusted as a result of the switchover. Work on transmitter sites is simplified if switchover does not occur during the coldest periods of the year. In light of this, there are about two years and a maximum of four periods left until Sweden should have made the full switchover to digital terrestrial TV.

One possibility is to continue the switchover directly after phase 1 and thus begin the next phase in the spring of 2006. This type of solution would require a switchover consisting of a total of five phases (Appendix 1). The aim would be to ensure that the switchover progresses as a continuous process, and that the first phase is not left as an independent project. Another option is to take a break in spring 2006 so that the switchover would only comprise four phases (Appendix 2). In this case, the aim would be to allow time for a comprehensive evaluation of the experiences from phase 1

The Commission's position is based on what impact the different options might have in terms of consumer interest, communication work, technical implementation, the possibility of utilising resources for assistance and advice as well as the need for evaluation. The viewpoints of terrestrial network players and retailers have also been taken into consideration.

Taking the interests of consumers into consideration

An ongoing switchover that continues as early as spring 2006 means that demand for set-top boxes will be steady, which benefits consumers in terms of product availability and price development. An ongoing switchover benefits competition between set-top box and content suppliers, which should lead to lower prices.

Taking a break from the switchover could result in this development being interrupted, resulting in less demand. If pressure on the market to produce simple and inexpensive products and products that meet special needs is insufficient, the consumer will not receive better access to these types of products. It is most likely that the element of competition that benefits the consumer will remain constant if the switchover progresses without a break.

Continuing the switchover without a break will also help prevent the belief on the part of some consumers that the process will not be completed. The group of “refusers” that has been identified in all of the Commission’s surveys should probably be more correctly designated as “procrastinators”. A certain amount of momentum in the switchover is thus preferable to prevent these consumers from unnecessarily delaying their actions.

Planning communication

Compared to taking a break, an ongoing switchover also means that it will be easier to take advantage of the information resources that were used in phase 1. The Commission has established a communication platform and produced a communication plan. The Commission has also managed to establish collaboration with several major players in the TV industry, in particular with SVT, TV4 and Teracom. One of the benefits of collaboration is the assistance telephone that has been established. It is thus desirable for the switchover to be an ongoing process in which all of the players’ initiatives are taken advantage of, built upon and gradually improved.

A break between phase 1 and phase 2 would also entail public awareness of the switchover being weakened. Greater and more costly information initiatives from the Commission and other players would be necessary. This is true no matter if the choice is made to start from the beginning when providing information or if information is provided on a continuous basis in order to sustain public awareness of the approaching switchover. It should also be noted that information about a phase to be implemented in autumn 2006 must be initiated in the spring and summer, which means it will compete with the approaching election for attention. Thus, from the point of view of information, a break in the switchover would be a considerable disadvantage in terms of implementing the Commission’s assignment.

Technical implementation of the switchover

Continuing with phase 2 in spring 2006 offers better opportunities for coping with the switchover to ensure that it is completed by 1 February 2008. The switchover should include as many phases as possible since some transmitter sites need to be adjusted the same day that analogue broadcasts cease. Technical prerequisites for coping with the switchover on time are greatly improved if the number of transmitter sites that need to be adjusted within the framework of the same phase is minimal.

Utilising resources for assistance and advice

In conjunction with the switchover from analogue to digital broadcasting on the terrestrial network, consumers will need telephone service and other assistance to cope with the change. If the switchover is divided into several phases, need will be spread out over a longer period of time and opportunities to offer adequate help to all consumers will improve.

Need for evaluation

The Commission believes that the experience gained from phase 1 will be valuable in terms of planning the continued switchover and determining what information is necessary. One advantage of taking a break from the switchover in spring 2006 is to enable a comprehensive evaluation of phase 1 to be performed. This would allow the Commission a more stable basis to work from in coming phases. The Commission would also have time to develop and clarify collaboration that was initiated before phase 1. New types of collaboration could also be initiated. The Commission would gain additional time to produce solutions for consumers with special needs.

However, the Commission believes that an evaluation of phase 1, in which consumer interests are safeguarded, can be performed on an ongoing basis. Strategic communication initiatives must be introduced early on, but they can be adapted gradually based on how digitalisation develops and the opinions of other stakeholders. Collaboration initiatives also risk stagnation if there is a break.

Viewpoints from other players

Teracom, SVT and TV4 strongly prefer that the first phase be followed up as soon as possible by additional phases to ensure that digitalisation is a continuous process. From Teracom’s point of view, it is important that there is a sufficient amount of time to convert and adjust transmitters to ensure adequate coverage on the digital terrestrial network. The new technology offers broadcasters advantages in terms of programmes. The companies want to keep service areas for regional and local broadcasts

united to the greatest extent possible. Furthermore, broadcasters pay double transmission fees as long as there is parallel broadcasting.

Representatives of the large retail chains have also requested that continuation from phase 1 progress quickly. A break from the switchover would be disadvantageous to retail chains in terms of stocks and training initiatives.

Scope of various phases

The Commission's proposal: The number of municipalities and households should be distributed as evenly as possible over time. The phases should be divided into one spring and one autumn phase in 2006 and 2007.

In its proposed switchover plan, the Commission has taken consideration of several different factors. The Commission has primarily taken consideration of the importance of there being a sufficient amount of time for technical preparations before each phase and of the necessity of creating positive prerequisites for clear information about the switchover.

Technical prerequisites

In principle, the Commission believes that the phases should be divided into spring and autumn phases in both 2006 and 2007. The spring phases could last from 1 March to 31 May, and the autumn phases could last from 1 September to 30 November. Areas that are not suitable for making switchover adjustments in the winter can be scheduled for late spring or early autumn. The time that is left over after completing phase 5 can be used to make any final adjustments.

Naturally, it is crucial that Teracom believes that expansion of the digital terrestrial network is practically feasible and that it is possible to verify adequate coverage before the switchover takes place. In its contact with the Digital TV Commission, Teracom has indicated that expansion will be prioritised for main transmitter sites and relay sites in the order they are impacted by the switchover, just as was the case for phase 1. One aim of the expansion is to ensure that there is access to terrestrial digital TV well in advance of the switchover becoming reality. *Clean cut* solutions entail relay sites being switched from analogue to digital broadcasting without a period of parallel broadcasting; the Commission and Teracom are working to make the impact of these switchovers as minimal as possible.

Prerequisites for communication initiatives

The Commission has to a large extent taken SVT's regional and TV4's local divisions of the broadcasting network into consideration. The express aim has been to minimise the effects on broadcasters' regional and local broadcasts to the extent possible. When considering this aspect, the Commission proposes that the switchover build upon an expansion based on phase 1. A solution of this kind would offer several advantages in terms of technological aspects and information.

Information initiatives that adhere to municipal boundaries will naturally spill over into the following phase, which is advantageous from a communication point of view. There are also advantages from a retailer point of view. Access to set-top boxes has been cited as a potential problem, but overlapping information will help retailers in adjacent areas prepare for several phases at the same time. This will guarantee consumers' opportunities to purchase a set-top box. A longer intensive sales period will probably also result in consumers receiving more offers with reduced prices as a result.

Area division

The Commission has aimed for the number of households and municipalities to be as evenly distributed as possible over the phases. The Commission also recognises the advantage of waiting to switch over metropolitan areas until it has become more experienced in managing several households at once. Stockholm, Gothenburg and Malmö should thus be placed in one of the later phases, and they should be placed in different ones.

Other considerations

In its proposal, the Commission has taken the fact that it is more difficult to reach the population with information during holiday periods and weekends into consideration. However, consideration was not taken of the placement of various events which might be considered as driving forces when digitalising the terrestrial network. Neither did the Commission consider the issues from a political point of view.

Summary of the Digital TV Commission's proposal

Based on the information above, the Commission believes that there are compelling reasons for a continuous switchover in which the second phase should take place in spring 2006. A continuous switchover with five phases is an option that also benefits the interests and needs of consumers. This option also offers the best chance to provide clear information about the switchover. The Commission will be able to maintain a continuous

communication process with households. The schedule for the switchover will be optimised so that, from a technical point of view, it should be possible to complete by 1 February 2008, and opportunities for utilising assistance and advice will improve.

The only compelling reason for taking a break in spring 2006 is that doing so would allow a sufficient amount of time to perform a comprehensive evaluation of phase 1. However, the Commission believes that an evaluation of this kind that safeguards consumer interests can be performed on an ongoing basis.

In terms of the geographical placement of various phases, the Commission believes that the number of municipalities and households should be distributed as evenly as possible over time and that they should be divided into spring and autumn phases in 2006 and 2007. One suggestion is to place the spring phases between 1 March and 31 May, and the autumn phases between 1 September and 30 November. The switchover in the metropolitan areas (Stockholm, Gothenburg and Malmö) should be placed in one of the later phases after the Commission has learned from the experiences of phase 1. Exact distribution of service areas to the different phases is outlined in Appendix 1.

The Commission's proposal is supported by Teracom, SVT and TV4, as well as by the major retail chains. Considering the Commission's budget, it would be preferable, from the Commission's point of view, if SVT's, TV4's and Teracom's communication initiatives could be firmly established at an early stage, preferably as an agreement with the Government.

In order for the switchover schedule to be kept, the Government should make a decision regarding the Commission's proposal by the end of May 2005. Should the decision be delayed, the information campaign before phase 2 might also be delayed. This will make implementing a phase in spring 2006 difficult.

Lorentz Andersson
Chairman

Pierre Helsén
Principal Secretary

Appendix 1

Commission's proposal for the switchover plan

Analogue broadcasting switch off in five phases

Phase 1 – autumn 2005

Location/Main transmitter site	Individuals	Households	Municipalities
Gävle	197 789	96	5
Motala	58 438	28	6
Visby	62 933	31	1
Total:	3	319 160	12

Phase 2 – spring 2006

Location/Main transmitter site	Individuals	Households	Municipalities
Bollnäs	113 279	55	4
Borlänge	238 246	116	9
Hudiksvall	61 135	30	2
Kisa	128 563	62	5
Mora	44 053	21	5
Norrköping	402 771	196	8
Uppsala	116 875	57	2
Västervik	103 390	50	4
Östhammar	89 005	43	3
Total:	9	1 297 317	42

Phase 3 – autumn 2006

Location/Main transmitter site	Individuals	Households	Municipalities
Borås	215 770	105	8
Emmaboda	205 881	100	10
Finnveden	89 005	43	2
Halmstad	218 467	106	5
Jönköping	89 904	44	2
Lycksele	33 264	16	3
Nässjö	156 433	76	7
Skellefteå	86 308	42	1
Skövde	253 530	123	13
Storuman	12 587	6	1
Varberg	58 438	28	2
Vislanda	118 674	58	5
Vännäs	102 491	50	5
Västerås	418 055	203	14
Örebro	309 270	150	10
Total:	15	2 368 077	88

Appendix 1

Phase 4 – spring 2007

Location/Main transmitter site	Individuals	Households	Municipalities	
Arvidsjaur	23 375	11	5	
Gällivare	29 669	14	2	
Kalix	37 759	18	2	
Kiruna	31 466	15	1	
Pajala	17 981	9	1	
Sollefteå	64 731	31	2	
Sundsvall	139 351	68	3	
Sveg	11 688	6	1	
Täsjö	27 870	14	3	
Ånge	17 981	9	2	
Älvsbyn	140 250	68	4	
Örnsköldsvik	51 255	25	1	
Östersund	93 501	45	5	
Överkalix	8 990	4	2	
Stockholm	1 601 196	777	29	
Total:	15	2 297 063	1 114	63

Phase 5 – autumn 2007

Location/Main transmitter site	Individuals	Households	Municipalities	
Helsingborg	100 693	49	4	
Hörby	436 036	212	13	
Karlshamn	207 679	101	8	
Karlskrona	35 962	18	1	
Malmö	418 055	203	12	
Bäckefors	109 684	53	7	
Filipstad	24 274	12	4	
Göteborg	737 215	358	12	
Karlstad	145 645	71	5	
Sunne	89 005	43	6	
Trollhättan	41 356	20	4	
Uddevalla	199 588	97	9	
Total:	12	2 545 192	1 237	85

Breakdown

Phase	Large stations	Small stations	Individuals	Households	Municipalities
1	3	9	319 160	155	12
2	9	97	1 297 317	630	42
3	15	145	2 368 077	1 150	88
4	15	279	2 297 063	1 114	63
5	12	123	2 545 192	1 237	85
Total	54	653	8 826 809	4 286	290

Distribution of the number of households during the period

Time period	2005		2006		2007
	Autumn	Spring	Autumn	Spring	Autumn
Phase	1	2	3	4	5
Main transmitter sites	3	9	15	15	12
Relay sites	9	97	145	279	123
Households	155	630	1150	1114	1237
Municipalities	12	42	88	63	85

Appendix 2

Alternative to switchover plan

Analogue broadcasting switch off in four phases

Phase 1 – autumn 2005

Location/Main transmitter site	Individuals	Households	Municipalities	
Gävle	197 789	96	5	
Motala	58 438	28	6	
Visby	62 933	31	1	
Total:	3	319 160	155	12

Phase 2 – autumn 2006

Location/Main transmitter site	Individuals	Households	Municipalities	
Bolnäs	113 279	55	4	
Borlänge	238 246	116	9	
Hudiksvall	61 135	30	2	
Kisa	128 563	62	5	
Mora	44 053	21	5	
Norrköping	402 771	196	8	
Uppsala	116 875	57	2	
Västervik	103 390	50	4	
Osthammar	89 005	43	3	
Borås	215 770	105	8	
Emmaboda	205 881	100	10	
Finnveden	89 005	43	2	
Jönköping	89 904	44	2	
Lycksele	33 264	16	3	
Nässjö	156 433	76	7	
Skellefteå	86 308	42	1	
Skövde	253 530	123	13	
Storuman	12 587	6	1	
Vislanda	118 674	58	5	
Vännäs	102 491	50	5	
Total:	20	2 661 164	1 293	99

Appendix 2

Phase 3 – spring 2007

Location/Main transmitter site	Individuals	Households	Municipalities	
Halmstad	218 467	106	5	
Varberg	58 438	28	2	
Västerås	418 055	203	14	
Örebro	309 270	150	10	
Arvidsjaur	23 375	11	5	
Gällivare	29 669	14	2	
Kalix	37 759	18	2	
Kiruna	31 466	15	1	
Pajala	17 981	9	1	
Sollefteå	64 731	31	2	
Sundsvall	139 351	68	3	
Sveg	11 688	6	1	
Täsjö	27 870	14	3	
Ange	17 981	9	2	
Älvsbyn	140 250	68	4	
Örnsköldsvik	51 255	25	1	
Östersund	93 501	45	5	
Överkalix	8 990	4	2	
Stockholm	1 601 196	777	29	
Total:	19	3 301 293	1 601	94

Phase 4 – autumn 2007

Location/Main transmitter site	Individuals	Households	Municipalities	
Helsingborg	100 693	49	4	
Hörby	436 036	212	13	
Karlshamn	207 679	101	8	
Karlskrona	35 962	18	1	
Malmö	418 055	203	12	
Bäckeфорs	109 684	53	7	
Filipstad	24 274	12	4	
Göteborg	737 215	358	12	
Karlstad	145 645	71	5	
Summe	89 005	43	6	
Trollhättan	41 356	20	4	
Uddevalla	199 588	97	9	
Total:	12	2 545 192	1 237	85

Breakdown

Phase	Large stations	Small stations	Individuals	Households	Municipalities
1	3	9	319 160	155	12
2	20	212	2 661 164	1 293	99
3	19	309	3 301 293	1 601	94
4	12	123	2 545 192	1 237	85
Total	54	653	8 826 809	4 286	290

Distribution of the number of households during the period

Time period	2005		2006		2007	
	Autumn	Spring	Autumn	Spring	Autumn	Spring
Phase	1		2		3	
Main transmitter sites	3		20		19	
Relay sites	9		212		309	
Households	155		1 293		1 601	
					1 237	

Appendix to the Commission's proposal for the switchover plan
Source: Teracom AB

2(2)

Appendix 2

Municipalities	12		99	94	85
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Appendix to the Commission's proposal for the switchover plan
Source: Teracom AB

3(3)

4. Breakdown of the transition plan dates as determined by the Government

Phase	Transmitter sites	Start of phase Broadcasting obligation ceases	SVT2 broadcasts cease	Broadcasting rights cease	End of phase Broadcasting rights cease by
2	Kisa, Norrköping	2006-02-15	2006-02-27	2006-03-20	2006-05-31
	Västerås, Uppsala, Örebro, Östhammar		2006-04-03	2006-04-24	
	Bollnäs, Borlänge, Hudiksvall, Mora		2006-05-02	2006-05-22	
3	Borås, Emmaboda, Finnveden, Halmstad, Jönköping, Nässjö, Skövde, Varberg, Vislanda, Västervik	2006-11-01	2006-11-06	2006-11-27	2006-12-12
4	Stockholm	2007-03-01	2007-03-12	2007-04-02	2007-06-11
	Sollefteå, Sundsvall, Sveg, Tåsjö, Ånge, Örnsköldsvik, Östersund		2007-04-16	2007-05-07	
	Arvidsjaur, Gällivare, Kalix, Kiruna, Pajala, Älvsbyn, Övertorneå		2007-05-14	2007-06-05	
5	Filipstad, Karlstad, Lycksele, Skellefteå, Storuman, Sunne, Vännäs	2007-08-27	2007-09-03	2007-09-24	2008-01-31
	Bäckefors, Göteborg, Trollhättan, Uddevalla		2007-09-24	2007-10-15	
	Helsingborg, Hörby, Karlshamn, Karlskrona, Malmö		2007-10-15	2007-11-05	

5. Decision of the Government regarding the switchover plan June 2005 – map



6. Teracom's build-out of the digital terrestrial network – MUX build-out

Build-out of the DTTV network in Sweden Population coverage (permanent homes)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Mux 1	-	50%	50%	70%	90%	90%	90%	98+%	98+%	99,8%
Mux 2	-	50%	50%	70%	90%	90%	90%	98%	98+%	98+%
Mux 3	-	50%	50%	70%	90%	90%	90%	98%	98%	98+%
Mux 4	-	-	50%	70%	90%	90%	90%	98%	98%	98+%
Mux 5	-	-	-	-	50%	50%	50%	50%	70%	70%
Mux 6	-	-	-	-	-	-	-	-	-	27%

The digital terrestrial TV network in Sweden (2008-01-01)

The digital TV switchover ¹⁾	Main transmitter sites	County	Number of MUXes transmitted ²⁾	Mother station for small transmitter sites (relay sites) (no.)	Municipalities primarily located in the coverage area ³⁾
Phase 4	Arvidsjaur	Norrbottens	4	8	Arjeplog, Arvidsjaur, Malå, Norsjö, Sorsele
Phase 2	Bollnäs	Gävleborgs	4	14	Bollnäs, Ljusdal, Ovanåker, Söderhamn
Phase 2	Borlänge Idkerberget	Dalarnas	4	25	Borlänge, Falun, Gagnef, Hedemora, Leksand, Ludvika, Smedjebacken, Säter, Vansbro
Phase 3	Borås Dalsjöfors	Västra Götalands	5	11	Borås, Herrljunga, Mark, Svenljunga, Tranemo, Ulricehamn, Vårgårda, Bollebygd
Phase 5	Bäckefors	Västra Götalands	5	11	Bengtfors, Dals Ed, Lidköping, Mellerud, Säffle, Åmål, Årjäng
Phase 3	Emmaboda	Kalmar	4	3	Borgholm, Emmaboda, Högsby, Kalmar, Lessebo, Mönsterås, Mörbylånga, Nybro, Torsås, Uppvidinge
Phase 5	Filipstad	Värmlands	4	4	Filipstad, Hällefors, Kristinehamn och Storfors
Phase 3	Finnveden	Jönköpings	4	3	Gislaved, Gnosjö
Phase 4	Gällivare	Norrbottens	4	11	Gällivare, Jokkmokk
Phase 1	Gävle Skogmur	Gävleborgs	4	5	Gävle, Hofors, Sandviken, Ockelbo, Älvkarleby
Phase 5	Göteborg Brudaremossen	Västra Götalands	5	14	Ale, Alingsås, Göteborg, Härryda, Kungsbacka, Kungälv, Lerum, Mölndal, Partille, Stenungsund, Tjörn, Öckerö
Phase 3	Halmstad	Hallands	4	4	Båstad, Halmstad, Hylte, Laholm, Markaryd
Phase 5	Helsingborg	Skåne	5	0	Helsingborg, Höganäs, Åstorp, Ängelholm
Phase 2	Hudiksvall Forsa	Gävleborgs	4	6	Hudiksvall, Nordanstig
Phase 5	Hörby	Skåne	5	11	Bjuv, Hässleholm, Hörby, Höör, Klippan, Kristianstad, Pers-torp, Simrishamn, Sjöbo, Skurup, Tomelilla, Ystad, Örkeljunga
Phase 3	Jönköping Bondberget	Jönköpings	4	2	Habo, Jönköping
Phase 4	Kalix	Norrbottens	4	2	Haparanda, Kalix
Phase 5	Karlshamn	Blekinge	4	3	Bromölla, Karlshamn, Olofström, Osby, Ronneby, Sölvesborg, Tingsryd, Östra Göinge

¹⁾ Time plan for the digital TV switchover: Phase 1: September-November 2005, Phase 2: February-May 2006, Phase 3: November 2006, Phase 4: March-May 2007, Phase 5: September-October 2007

²⁾ The number of MUXes refers to the build-out that will take place during the different phases of the digital TV switchover.

³⁾ In some cases, municipalities can receive coverage from several main transmitter sites. In this table, the municipalities have been assigned to the most dominant transmitter site in their region.

The digital terrestrial TV network in Sweden (2008-01-01)

The digital TV switchover ¹⁾	Main transmitter sites	County	Number of MUXes transmitted ²⁾	Mother station for small transmitter sites (relay sites) (no.)	Municipalities primarily located in the coverage area ³⁾
Phase 5	Karlskrona	Blekinge	4	2	Karlskrona
Phase 5	Karlstad	Värmlands	4	5	Forshaga, Grums, Hammarö, Karlstad, Kil
Phase 4	Kiruna	Norrbottnens	4	9	Kiruna
Phase 2	Kisa	Östergötlands	5	2	Boxholm, Kinda, Linköping, Ydre, Åtvidaberg
Phase 5	Lycksele	Västerbottens	4	13	Bjurholm, Lycksele, Åsele
Phase 5	Malmö	Skåne	5	1	Bjurlöv, Eslöv, Kävlinge, Landskrona, Lomma, Lund, Malmö, Svalöf, Staffanstorps, Svedala, Trelleborg, Vellinge
Phase 2	Mora Eldris	Dalarnas	4	20	Malung, Mora, Orsa, Rättvik, Älvdalen
Phase 1	Motala	Östergötlands	5	0	Askersund, Finspång, Karlsborg, Mjölby, Motala, Vadstena
Phase 2	Norrköping/Krokek	Östergötlands	5	7	Flen, Katrineholm, Norrköping, Nyköping, Oxelösund, Söderköping, Valdemarsvik, Vingåker
Phase 3	Nässjö	Jönköpings	4	14	Aneby, Eksjö, Nässjö, Sävsjö, Tranås, Vaggeryd, Vetlanda
Phase 4	Pajala	Norrbottnens	4	5	Pajala
Phase 5	Skellefteå	Västerbottens	4	6	Skellefteå
Phase 3	Skövde	Västra Götalands	5	3	Falköping, Gullspång, Götene, Hjo, Mariestad, Mullsjö, Skara, Skövde, Tibro, Tidaholm, Töreboda, Vara, Ödeshög
Phase 4	Sollefteå	Västernorrlands	4	36	Kramfors, Sollefteå
Phase 4	Stockholm Nacka	Stockholms	6	9	Botkyrka, Danderyd, Ekerö, Haninge, Huddinge, Håbo, Järfälla, Lidingö, Nacka, Nynäshamn, Salem, Sigtuna, Sollentuna, Solna, Stockholm, Strängnäs, Sundbyberg, Södertälje, Tyresö, Täby, Upplands-Bro, Upplands-Väsby, Vallentuna, Vaxholm, Värmdö, Österåker, Nykvarn, Gnesta, Trosa
Phase 5	Storuman	Västerbottens	4	22	Storuman
Phase 4	Sundsvall	Västernorrlands	5	29	Härnösand, Sundsvall, Timrå
Phase 5	Sunne	Värmlands	4	35	Arvika, Eda, Hagfors, Munkfors, Sunne, Torsby

¹⁾ Time plan for the digital TV switchover: Phase 1: September-November 2005, Phase 2: February-May 2006, Phase 3: November 2006, Phase 4: March-May 2007, Phase 5: September-October 2007

²⁾ The number of MUXes refers to the build-out that will take place during the different phases of the digital TV switchover.

³⁾ In some cases, municipalities can receive coverage from several main transmitter sites. In this table, the municipalities have been assigned to the most dominant transmitter site in their region.

The digital terrestrial TV network in Sweden (2008-01-01)

The digital TV switchover ¹⁾	Main transmitter sites	County	Number of MUXes transmitted ²⁾	Mother station for small transmitter sites (relay sites) (no.)	Municipalities primarily located in the coverage area ³⁾
Phase 4	Sveg	Jämtlands	4	20	Härjedalen
Phase 5	Trollhättan	Västra Götalands	5	0	Essunga, Grästorp, Trollhättan, Vänersborg
Phase 4	Tåsjö	Jämtlands	13		Dorotea, Strömsund, Vilhelmina
Phase 5	Uddevalla	Västra Götalands	5	11	Färgelanda, Lilla Edet, Lysekil, Munkedal, Orust, Sotenäs, Strömstad, Tanum, Uddevalla
Phase 2	Uppsala/Vedyxa	Uppsala	6	1	Knivsta, Uppsala
Phase 3	Varberg	Hallands	4	2	Falkenberg, Varberg
Phase 1	Visby Follingbo	Gotlands	5	6	Gotland
Phase 3	Vislanda	Kronobergs	4	5	Alvesta, Ljungby, Värnamo, Växjö, Älmhult
Phase 5	Vännäs	Västerbottens	4	16	Nordmaling, Robertsfors, Umeå, Vindeln, Vännäs
Phase 3	Västervik Fårhult	Kalmar	4	3	Hultsfred, Oskarshamn, Vimmerby, Västervik
Phase 2	Västerås Lillhärad	Västmalands	6	1	Arboga, Avesta, Enköping, Eskilstuna, Fagersta, Hallstahammar, Heby, Kungsör, Köping, Norberg, Sala, Skinnskatteberg, Surahammar, Västerås
Phase 4	Ånge	Västernorrlands	4	9	Bräcke, Ånge
Phase 4	Älvsbyn	Norrbottnens	5	11	Boden, Luleå, Piteå, Älvsbyn
Phase 2	Örebro Lockhyttan	Örebro	5	4	Degerfors, Hallsberg, Karlskoga, Kumla, Laxå, Lindesberg, Ljusnarsberg, Nora, Lekeberg, Örebro
Phase 4	Örnsköldsvik	Västernorrlands	4	19	Örnsköldsvik
Phase 4	Östersund	Jämtlands	5	42	Berg, Krokom, Ragunda, Åre, Östersund
Phase 2	Östhammar	Uppsala	5	2	Norrälje, Tierp, Östhammar
Phase 4	Överkalix	Norrbottnens	4	2	Överkalix, Övertorneå

¹⁾ Time plan for the digital TV switchover: Phase 1: September-November 2005, Phase 2: February-May 2006, Phase 3: November 2006, Phase 4: March-May 2007, Phase 5: September-October 2007

²⁾ The number of MUXes refers to the build-out that will take place during the different phases of the digital TV switchover.

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Swedens Switchover to Digital TV 2005-2007



Municipal checklist and step-by-step guide



What will happen if the municipality does not act?

- Municipal property will be without TV
 - If MATV is used
- Households whose only source of income is social allowance *may* lose TV reception.
- Management and staff will lack know-how
 - Unable to respond to queries from citizens and the media
- Should anything go awry during the switchover, the municipality will not know where to find information or where it should turn for help
- Everything takes more time and energy, may be more expensive
- An unprepared municipality can result in chaos during the switchover
- Negative opinion created



If the municipality acts in time :

- Property and residents will receive TV as usual after the transition - Property with MATV will be taken care of well in advance.
- Elderly citizens will be affected to the least possible extent
- Consumers will receive good advice from consumer guidance advisors
- Households that receive social allowance will be able to cope with the transition
- The municipality will be able to respond to queries – internally/externally
- Calm and balanced transition
- Level of confidence remains the same

Step-by-step guide/checklist:

1. Create a working group – separate responsibility from issues
2. Gain support internally and from management – understanding
3. Perform an inventory of property – take action if there is MATV
4. Activate information channels – internally/externally
5. Provide internal information: consumer guidance advisor, home-help service, social chief guardian, switchboard, public relations officer, civic office



KTH Computer Science
and Communication

Workshops to investigate future utilisation of Digital TV

Report, English version, 2006-06-05

Contents	
Background	2
Aim	2
Method	3
Participants	3
Results	5
Video prototypes	5
Discussions	7
Reflections	8
Summary	8
Appendices	
List of participants	9
Separate DVD disc	
<i>"12 video-prototyper från workshopar om digital-tv"</i>	
("12 Video Prototypes from the Workshops on Digital TV")	

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Workshops to investigate future utilisation of digital TV

During the spring of 2006, two workshops were held to investigate future utilisation of digital TV. The workshops were held by the HCI Group at the School for Computer Science and Communication, CSC at the Royal Institute of Technology, KTH, in Stockholm. The workshops were based on a methodology that was developed to take advantage of user experiences and needs.

Reporting

Reports from the workshops primarily consist of the videos on the DVD called “*12 videoprototyper från workshopar om Digital-tv*” (“12 Video Prototypes from the Workshops on Digital TV”). This report describes the background, methodology and other aspects not found in the videos. The report is intended to be used as the basis for the Digital TV Commission’s continued efforts as well as those on the part of other stakeholders.

Background

Sweden is switching over from analogue to digital TV. Digital TV provides improved sound and picture quality as well as new services such as an electronic programme guide and improved teletext. There is a sense of unease among some individuals with functional disabilities that accessibility to the improvements will not apply to everyone. For this reason, the Digital TV Commission, in collaboration with the Swedish Disability Federation, ordered the series of workshops to determine what services and products are needed. The participants were various stakeholders in the Digital TV switchover and consumers with functional disabilities.

Aim

The aim of the workshops was to create new, meaningful ideas that are based on and relevant to the day-to-day lives of participants. Many of these ideas can also pertain to other people; that is, the ideas are of a general nature and are perceived as meaningful by many people. A related aim was for the stakeholders who participated to take their newfound knowledge and experiences from the workshops into consideration when designing and developing services and products.

Method

The aim of the workshop methodology involved taking advantage of concrete user experiences during product development. The method is based on a structured format in which designers (interaction designers, programmers, industrial designers, etc.) and users take part. The methodology is an excellent complement to other activities related to product development/design process. In short, the methodology contains a few steps that enable participants more easily to show which changes and improvements they would appreciate. Participants jointly design and act out scenarios that are based on real events. One basis of the methodology is that participants are intended users of the technology or services that the workshop treats. The ideas that emerge are based on the reality of users, and are then shaped into video prototypes. In the video prototypes, participants film events that they describe themselves and act out. They make short, simple video films that clearly show how they would like to use the ideas in practice. The method was developed by Bosse Westerlund and Sinna Lindquist at CSC, KTH, and it has been used in several different projects. The method has also been described in detail in some reports which were published within the framework of the Swedish Institute of Assistive Technology’s project called *Bättre tillsammans*; the reports are called “*Verklighetsbaserade videoprototyper*” (“Reality-based Video Prototypes”).

<http://www.hi.se/tillsammans/video.shtm>

They are illustrated in a 27 Mb QuickTime video:

<http://www.bowesterlund.se/publications/video.html>

Participants

Around fifty intended users of digital TV were invited to the workshops. These individuals are referred to as “users” in the report. Around ten stakeholders were also invited to attend. The stakeholders represented different types of service suppliers, hardware and software manufacturers and salespeople. The aim was to invite as many representatives as possible from all the different steps in the process, from content to viewer. The list of participants is found in an appendix.

Participant preparation before the workshops

Prior to the first workshop, the intended users prepared at home a week in advance by entering information about their TV usage into a journal. The journals constituted one of the building blocks for the first workshop.

First workshop

The first workshop was held on 20 March 2006. There were 17 participants and three people from CSC, KTH. The participants worked in three groups consisting of around seven people each. It was difficult to recruit users to the first workshop, which meant that the majority of participants were stakeholders. The participants worked for five hours, including a short lunch break in the same area as the workshop. The workshop primarily investigated the field. Discussions were at times lively, and five video prototypes were made. The strip of text provided by SVT was the object of a great deal of discussion. Some of the issues involved other programme producers not providing this service. That menus in the digital receiver are not accessible via audio was also experienced as a problem. The text to speech function is experienced as technically complicated. One proposal to facilitate usage for blind, visually impaired and dyslexic users was to build the services directly into the receiver. This would enable the receiver to read text for movies, menus, programme guides, etc. This requires that the text be received as text and not as images, as is generally the case today.

Second workshop

The second workshop was held on 29 March 2006. There were 22 participants and three people from KTH. Two sign language interpreters and one assistant also took part. Many of the participants from the first workshop also took part in the second workshop. All of the new participants, with the exception of one person, were users, making the majority of participants at the second workshop users. Some of the ideas that had emerged from the first workshop were further developed at the second workshop, and several new ideas emerged. Seven video prototypes were created at the second workshop.

Results

Different types of results emerged from both workshops. Several viewpoints and problems were clarified during the discussions and some solutions to these emerged that are formulated in the video prototypes. Finally, participants gained a great deal of new know-how as result of the discussions and clarifications. It was clear that there was a great deal of information that not everyone was aware of.

Video prototypes

Twelve video prototypes were produced during the two workshops. Following is a description of the prototypes. The descriptions vary from individual products to large systems.

REMOTE CONTROLS AND MANUALS:

LEGO REMOTE

Problems related to modern remote controls were identified, both in terms of their complexity and several functions that are not used. Another issue involved the necessity of using several remote controls for several different devices. A proposed solution is based on being able to select buttons and functions individually.

TV WITH OPTIONS, REMOTE CONTROL

A remote control that offers simple access to different functions that the user needs, such as audio description, sign language, descriptions for the deaf, etc. Easy to expand.

MANUAL FOR EVERYONE

The proposal shows one clear manual that focuses information that is most relevant to the user.

INTERPRETED TV:

CURRENT STATUS

This film shows deficiencies in how strips of text are read aloud today, both in terms of timing and character of voices. Visually impaired users also experience difficulty finding desired channels.

USING TV WITH OPTIONS

This film shows how sign language works on a television with optional means of communication.

AUDIO DESCRIPTIONS OF THE NEWS

Audio descriptions enable users to “watch” TV even when it cannot be seen since they can hear what is being shown via an audio description.

SOUND TO TEXT

The sound to text function translates sound to text so that others sleeping in the same room, for example, are not disturbed by sound from the television. It also shows the importance of being able to switch between different colours for text and background.

SPEECH SYNTHESIS IN THE RECEIVER:

AUDIO TV GUIDE

The film shows the advantages of using an audio TV guide.

RECEIVER WITH MENUS THAT ARE READ ALOUD

A digital receiver that reads all of the menu options aloud. There is also an entire section on dealing with adaptations for various functional disabilities.

SYSTEMS THAT OFFER FREEDOM:

PERSONAL MEDIA TERMINAL, PMT

The film shows a mobile unit that plays TV sound in a number of different ways. For example, it is possible to hear speech minus background sound and to have foreign segments translated directly.

ACCESSIBILITY BOX

A large number of translation services are made available via hearing, sight or feeling as a result of a special apparatus being connected to the Internet.

COLLECTED EFFORT:

DEPARTMENT TO ENSURE TV ACCESSIBILITY FOR EVERYONE

The film claims that a collected effort is needed to achieve accessibility to the TV media.

Discussions during the workshops

In the first workshop, the discussions can be summarised as:

- Design-for-all aspects are very important to observe for a number of different reasons. This is primarily true of products and services that are developed to help people who have various types of functional impairments, and which also simplify life for a large number of other people. The design-for-all aspect means that products are designed so that they can be used by “everyone”, which helps producers avoid unique and costly solutions for a small number of users.

- There are no real technical limitations to future development, rather,

- The issue is more about who makes decisions about development. Two different groups emerged on the issue. One includes people who believe that services should be financed by the different users themselves, while the other group consists of people who believe that society should ensure that TV is accessible to everyone. The latter group cited the United Kingdom as an example. Most users experience a solution involving a separate receiver as very primitive; the switchover to digital TV has been a known fact and has been planned for several years. A separate receiver is needed for each television set and video player in addition to an extra remote control. Naturally, this incurs extra expense and complicates the set-up, which can result in problems such as more difficult installation and trouble-shooting. This issue applies to all users. All of the instructions are in writing, which can reduce the level of accessibility. All of the marketing material is also in writing, and there are no instruction videos. However, there are relatively good sources of information on various websites. During the discussions, it became clear that knowledge about users with functional disabilities needs to improve and that the opportunities offered by technology are not equal for all users. SVT has a good level of awareness of these issues and has worked to increase accessibility for a long period of time. One of the problems, however, is that there are so many different players with different intentions and interests.

Questionnaire

After the second workshop, we sent out an e-mail questionnaire to all of the participants asking how they had experienced their participation in the workshop. Just under half of the participants responded to the questionnaire. The participants responded that they experienced the workshop as productive and that they were comfortable in the situation. Those who

responded perhaps did so because they found the experience to be positive, but those of us who were responsible for the workshops also experienced the atmosphere to be open, inquisitive and productive.

Reflections

There were some difficulties recruiting users. The method is based on participants having concrete experiences of their own. The workshop participants were in many cases more representative of users with functional impairments than of users who had experience of digital TV utilisation. Some of the stakeholders abused the situation by taking part more for their own gain than to share with others. Even so, we believe the activities resulted in several concrete and relevant proposals. The proposals spanned solutions for delimited problems to entire, complex systems. Remote controls are an example of a delimited problem. One of the more complex solutions was the mobile media terminal that translates relevant segments of TV programmes to make them accessible to everyone. The most radical proposal was perhaps introducing a new department to ensure TV accessibility.

Summary

The vast majority of participants expressed that they learned a great deal in terms of existing deficiencies and opportunities in terms of utilising modern digital TV. Focus was on accessibility for users with functional disabilities, but many of the aspects apply to the vast majority of users.

Appendix: List of participants

PARTICIPANTS, USERS

Gum Anders Andersson
Kane Bengtsson
Ilias Bennani
Hans Collinder
Vivi-Anne Emanuelsson
Emil Erdtman
Magnus Gustafson
Hans Hammarlund
Ingela Hanson
Stig Kjellberg
Kitt Kuhlström-Quist
Sonja Lindh
Inger Rålenius
Jacob Selin

PARTICIPANTS, STAKEHOLDERS

Rickard Bjursåker, Expert Invest AB
Pia Brunell-Hansson, Sagem Communication Nordic AB
Peter Johnsson, Boxer TV Access AB
Lars Jönsson, The Swedish Consumer Agency
Peter Larsson, Sveriges Television AB
Göran Lindgren, Sveriges Television AB
Johan Lindroos, Teracom AB
Bo Lindqvist, A2B
Erik Lundbeck, Sveriges Television AB

ORGANISERS, INITIATORS

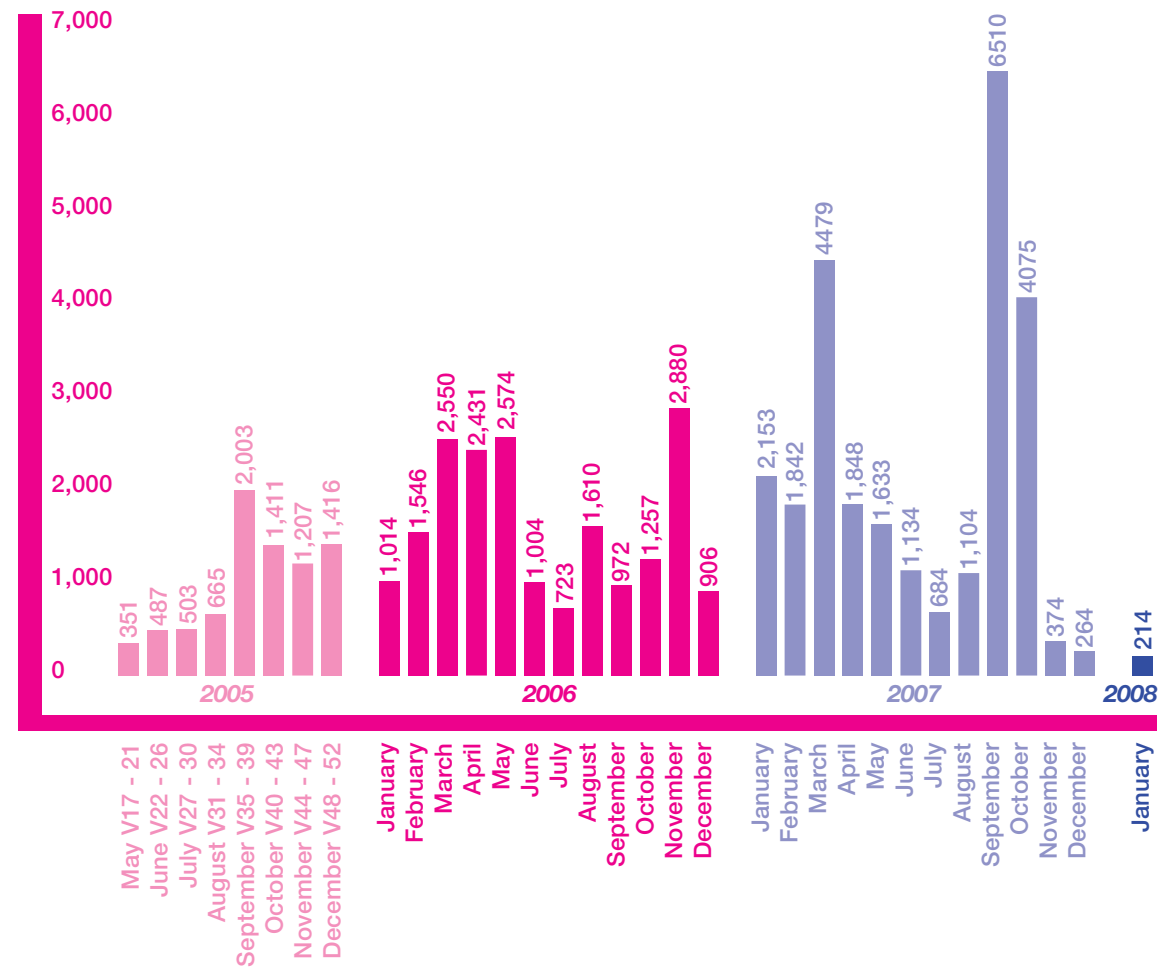
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Sinna Lindquist, sinna@kth.se
Bosse Westerlund, bosse@nada.kth.se

Calls to the Digital TV Switchover Help Telephone

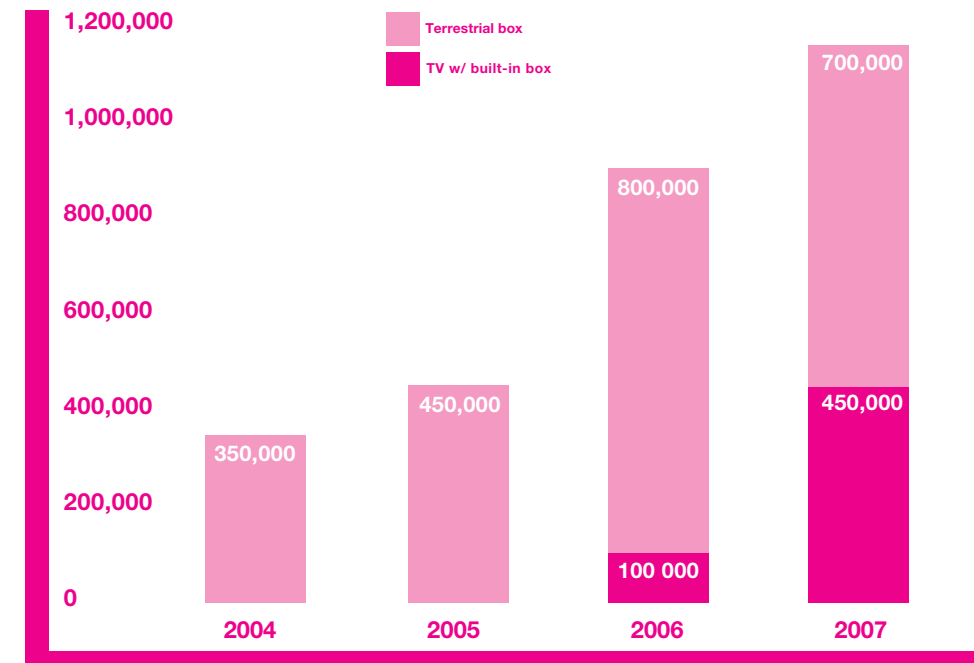
Calls per month



Source: Aditro AB





Sales of digital TV receivers 2004-2007




Total, number of units






Source: Branschkansliets Marknadsinformation AB

11. International overview

	SWITCHOVER PROCESS	ACTORS	INFORMATION
Denmark 	<ul style="list-style-type: none"> Single switchover date for entire country, preliminary date 31 October 2009 Direct to MPEG4 	<ul style="list-style-type: none"> Ministry of Culture Media Secretariat Industry Organisation BDM 	<ul style="list-style-type: none"> DKK 50 million earmarked for informational campaign, procurement to be completed in March 2008
Finland 	<ul style="list-style-type: none"> Single switchover date for the entire country, 1 September 2007 The cable network will be digitised no later than the end of February 2008 Requirement of 99,9 percents household coverage in the terrestrial network 	<ul style="list-style-type: none"> Ministry of Transportation and Communication FICORA (Finnish Communications Regulatory Authority) Regulatory Authority -TV 2007 Group (committee with Digita and the TV channels) Digita (distributor in the terrestrial network) 	<ul style="list-style-type: none"> Digita – responsible for info centre and telephone support TV 2007 Group - responsible for informational campaigns
France 	<ul style="list-style-type: none"> Switchover in stages between 2008 and 2011 Requirement of 95% household coverage for the terrestrial network 18 free channels, 11 pay channels and several local channels 	<ul style="list-style-type: none"> Digital Strategic Committee ansvarar för att planera och genomföra övergången France Télé Numérique, (utgörs av tv-bolagen och regeringen) ansvarar för implementering och kommunikation Le Conseil supérieur de l'audiovisuel (CSA) ansvarar för frekvenser 	<ul style="list-style-type: none"> France Télé Numérique is responsible for information and support
Italy 	<ul style="list-style-type: none"> Originally the switchover was to be completed in 2008. Now revised to 2012 Sardina and Valle d'Aosta, first regions 	<ul style="list-style-type: none"> Ministry of Communications DGTVi (equivalent of Digital TV Commission) 	

Norway 	<ul style="list-style-type: none"> Switchover in stages between 2008 and 2009 Parallel broadcasts for 6—12 months Requirement of 95% coverage (permanent households) and 70% coverage (leisure homes) in the terrestrial network Direct to MPEG4 	<ul style="list-style-type: none"> Ministry of Culture and Church Affairs Ministry of Transportation and Communication NTV (owned by NRK, TV2 and Telenor) RiksTV (owned by NTV) Telenor/Norkring (responsible for distribution) 	<ul style="list-style-type: none"> The primary informational campaign will be carried out by NTV The Ministry of Culture and Church Affairs will distribute platform-neutral information
Spain 	<ul style="list-style-type: none"> Switchover in four stages; test runs at the end of 2008. Full completion 2010. Requirement of 95% household coverage in the terrestrial network 	<ul style="list-style-type: none"> Ministry of Industry Secretary for Telecom and Info. Society Impulsa TDT (consists of public and private TV channels) 	<ul style="list-style-type: none"> Impulsa TDT has primary responsibility for information The Government has allocated a budget of EUR 10.5 million to Impulsa TDT. The distributors have contributed an equivalent amount.
UK 	<ul style="list-style-type: none"> Switchover in stages between 2008 and the end of 2012 BB2 will be shut down first. The freed spectrum will be used for parallel broadcasts. One month later the other analogue channels will be shut down. Requirement of 98.5% household coverage for BBC in the terrestrial network 	<ul style="list-style-type: none"> DCMS (Department for Culture, Media and Sport) BERR (Department for Business Enterprise and Regulatory Reform) Ofcom (regulatory authority) Digital UK (equivalent of DTV Commission) BBC (DSHS) 	<ul style="list-style-type: none"> Digital UK is primarily responsible for the informational campaign. Budget of GBP 200 million. BBC, though the Digital Switchover Help Scheme (DSHS) is responsible for support to specific groups, including 75+. Budget of GBP 603 million taken from BBC's licensing fee
Germany	<ul style="list-style-type: none"> Switchover in stages between 2003 (Berlin) and the end of 2008 	<ul style="list-style-type: none"> Media authorities in the 14 Bundesländer TV channels 	<ul style="list-style-type: none"> A large portion of the responsibility for information lies with the media authorities and TV channels in each

	<ul style="list-style-type: none"> Requirement of 90% household coverage in the terrestrial network 	<ul style="list-style-type: none"> Distributors and manufacturers 	<p>Bundesland</p> <ul style="list-style-type: none"> Weak position for the terrestrial network, 10% penetration Around 24 digital terrestrial channels, of which half are public service
<p>Czech Republic</p> 	<ul style="list-style-type: none"> Switchover in stages between October 2010 December 2012 Test run in Domazlice region in 2007 	<ul style="list-style-type: none"> Government and affected authorities 	<ul style="list-style-type: none"> The structure and the plans for the informational campaign are established in the switchover plan (TTP) that will be adopted in 2008
<p>USA</p> 	<ul style="list-style-type: none"> Switchover should be completed 17 Feb 2009 95% of all full power stations already have parallel broadcasts 	<ul style="list-style-type: none"> Federal actors – FCC, NTIA, US Congress Private actors – NAB (National Association of Broadcasters) 	<ul style="list-style-type: none"> NAB has primary responsibility for increased awareness NTIA is implementing an informational campaign for SEK 5 million NTIA is responsible for a coupon program worth USD 1.5 billion. The coupons subsidise consumer purchases of digital TV receivers and will be administered by IBM.

Surveys

- 1 Final Survey – General opinion about the digital TV switchover in Sweden, including cable households and leisure homes
- 2 Final Survey – Digital TV Switchover “Refuseniks”
- 3 Final Survey – Digital TV Switchover “75+”

Summary: General opinion about the digital TV switchover in Sweden

In the spring of 2003, the Riksdag (Swedish Parliament) decided to digitise the country’s terrestrial network, i.e. the broadcasting network that at the time the decision was passed provided almost 1.4 million Swedish households with TV. This switchover, which started in September 2005, is now completed. Below is a summary of the results from Mediavision’s final survey of the general opinion of 18-74 year olds in Sweden about the digital TV switchover in the terrestrial network. This opinion survey is the last in a series of surveys intended to follow and analyze the digital TV switchover and how the general public perceived the technological shift. During 2005-2007, each of the five switchover stages was studied in detail. However, this study focuses on current general opinion, i.e. after the completion of the switchover, among those both directly and indirectly affected. A separate survey was also conducted in December 2007 regarding the opinion of the elderly population and persons with certain types of handicaps to the digital TV switchover. As opposed to the surveys conducted after each individual switchover stage, this report is limited in that it does not analyze the various purchasing alternatives available to consumers or the choices regarding technology or operator that consumers actually made. Rather, the purpose of this report is to describe the current opinions and attitudes related to the decision to switch to digital terrestrial broadcasts and the actual implementation of the

decision now that the switchover has been completed. In order to include as many consumer aspects of the technological shift as possible, this final survey also includes cable households and persons with leisure homes. By including these groups in the survey population, it is also possible to evaluate how the shift affected persons who may have only come into contact with the digital TV switchover indirectly or outside their primary residence. The survey was conducted on assignment from the Digital TV Commission.

TV reception and action taken in conjunction with the switchover

Even if a household’s mode of TV reception is not the primary focus of this report, it serves as a partial basis for the analysis of several of the opinion questions. To begin with, it is interesting to note that a relatively large percentage of the 18-74 year olds who were participated in the survey do not know which type of TV distribution they have. In other words, five percent, which corresponds to almost 320,000 persons in the above mentioned age group, do not currently know via which mode of reception they receive their TV signal. Mediavision also tracks TV reception of Swedish households in other surveys and this percentage is considerably lower. However, in its tracking surveys, Mediavision uses more detailed questions which are in turn supported by multiple control questions requiring the respondent to provide information about both channel access and technical equipment. The conclusion that can be drawn is that, despite the relatively large amount of attention placed on mode of reception in recent years, a large number of people are not knowledgeable about their TV distribution if they are not given specific guidance. The most reason-

able explanation for this is probably the simplest explanation: TV distribution is only marginally interesting for many people, particularly in relation to content. Among the 95 percent who “know” what type of distribution they have, the most common mode of reception (after adjusting for double coverage) is cable TV (46 percent), followed by terrestrial TV (33 percent). Only two percent of households do not have functional TV reception. There is considerable uncertainty among cable households about whether their reception is analogue or digital and approximately seven percent of all cable TV households say that they “do not know” the answer to this question. However, almost two-thirds of cable TV households know that they have analogue reception. The opinion survey reports that, on an individual level, 62 percent of those interviewed (with functional TV reception) say that they have some form of digital TV either in their primary household or in their leisure home (digital cable TV, terrestrial reception, satellite reception or IPTV). This is in line with other independent surveys, for example Mediavision’s digital TV tracking from Q4 2007, which reports 61 percent penetration for digital TV on an individual level. In total, 21 percent of households say that they have terrestrial pay TV via Boxer and 12 percent have FTA. Only 11 percent of all households reported that they were forced to take action as a direct result of the switchover to ensure that they would be able to continue watching television – by either purchasing a new TV antenna or a digital TV receiver. This implies that the majority of the population opted to digitise their TV equipment before the actual switchover date. Almost half of all respondents with digital TV say that they were able to purchase the needed digital TV equipment “without

any problems”, while almost one third thought that it was “easier than expected”. Two-thirds say that they switched to digital reception because they had to, while 34 percent say that they switched to digital TV to have access to more channels.

The switchover: general opinions, opinions about information and the effect on TV viewing

Almost 90 percent of those that say that they have access to some form of digital TV (62 percent of the entire population) say that they watch as much or more TV than they did before the switchover. The remaining 10 percent say that they watch less TV than before the switchover or that they do not watch TV at all. The results also show that at the time the survey was conducted, approximately 12 percent had at least one TV in their household that could not receive a TV signal. The most common explanations are that this TV set will be thrown away and that it is only used to watch recorded movies. A more detailed analysis shows that a comparison of TV viewing before and after the switchover is dependent on age. Thirteen percent of 65-74 year olds answer that they watch more TV now than they did before the switchover, which is slightly higher than the population as a whole. Almost half of the entire survey population (18-74 year olds) watch the same TV channels as before the switchover, while more than 40 percent say that they watch more channels after the switchover. A significantly lower share of 18-24 year olds, 28 percent, say that they watch more TV channels than before. Sixty-five percent of this age group say that they watch the same channels as before the switchover. Fifty-nine percent of the total survey population say that they were well-informed about the switchover, i.e. they knew when the switchover

would occur and how it would affect their household. Nine percent felt that they were poorly informed and did not know when the switchover would take place. The remaining 32 percent felt that they were partly informed about the switchover. The youngest age group, 18-24 year olds, was somewhat less well-informed (42 percent) and somewhat more poorly informed (16 percent) than the population as a whole. The 45-64 year olds were best informed; 65 percent answered that they were well-informed about the digital TV switchover. The majority of the survey population were informed about the switchover via TV or newspapers, but many also mention friends and family followed by Digital TV Commission’s mailings and information from digital TV providers. Two percent say that they received information from Digital TV Commission’s information bus. Three percent say that they did not receive any information at all. Friends and family were a more common source of information among the younger age groups than the older age groups. A relatively larger share of terrestrial households received information via TV, and a relatively smaller share of the oldest age group received information via the Internet. The survey population was given the opportunity to rate the importance of a number of aspects related to the switchover and their satisfaction levels of TV services before and after the switchover. More than half of the respondents with digital TV consider improved sound and picture quality to be important or very important. Thirty-four percent think that it is important or very important to have access to a large selection of channels. Many consider access to digital add-on services, for example high definition TV (HDTV) or a hard disc with recording capacity (PVR) to be

significantly less important (14 percent). If satisfaction levels are compared before and after the digital TV switchover, more respondents say that they are very satisfied or dissatisfied with the sound and picture quality and their expenses for digital TV (i.e. fewer express neutrality) after the switchover. The respondents are more satisfied with the number of channels they have access to after the switchover (30 percent more of the respondents were satisfied with the number of TV channels after the switchover than before). Seventy-three percent of respondents that have some type of digital TV reception say that they are satisfied with their current digital TV package and do not plan to switch during the coming year. A larger share of those with terrestrial digital TV says that they intend to keep their current TV package during the coming year (77 percent) than the population as a whole. Forty-four percent of all respondents with digital TV did not have any problems during the switchover. Thirty-eight percent say that they were neither affected positively nor negatively by the switchover in the terrestrial network. Approximately 16 percent were affected negatively and think that the digital TV switchover was a “difficult experience”. Relatively more terrestrial TV homes felt that the switchover took place without any problems (44 percent) and half of the youngest age group felt the same. The oldest age group, 65-74 year olds, was affected most negatively by the digital TV switchover; one-fifth reported a negative experience.

Opinion of cable TV households

More than half of Sweden’s households receive their TV signal via cable and, as a result, were not directly affected by the switchover in the terrestrial

network. However, this survey, as well as previous surveys, has shown that many cable TV households mistakenly believe that they were affected by the switchover and even believe that they “already are digital” since they did not need to do anything when the switchover reached their region. The conclusion these households have drawn, often incorrectly, is that they currently have digital cable TV. When asked about the household’s TV reception, 41 percent of those living in cable TV households initially answered that they have digital cable TV. When given a follow-up question about whether or not they have a digital TV box, 29 percent of all cable TV households answer affirmatively. In other words, there is a rather large share of “wrong answers”. Among individuals living in analogue cable TV households who originally said that they had digital TV but changed their answer after the follow-up question, almost 40 percent say that the survey was the first time that they understood that they were not directly affected by the digital TV switchover. Even after the follow-up question, there is still a significant portion of the cable TV population that can not answer if they have digital or analogue TV reception. The primary reasons cable TV households switched to digital reception was to gain access to more or specific channels and that they had to since their TV operator switched to a digital cable signal. Approximately 29 percent of the individuals with analogue cable TV who believed that they had digital cable TV also believed that their cable TV network would automatically switch to digital TV. Like many of those who mistakenly believed that they had digital cable TV, these individuals said that they had heard about the digital TV switchover through the media and therefore believed that the switchover would also

affect their household. The primary reason for why analogue cable TV households had not switched to digital TV was quite simply that the households felt they did not need digital TV (71 percent).

Leisure home owners: TV reception and opinions

In total, 17 percent of the individuals who participated in this survey had access to a leisure home. Of these, 69 percent needed to take some type of action in order to be able to continue receiving a TV signal in their leisure home after the digital switchover in the terrestrial network. Approximately 88 percent of individuals with a leisure home said that they had functional TV reception in their leisure home before the switchover. Of those with functional TV reception before the switchover, 90 percent had terrestrial reception in their leisure home. After the switchover, one-fourth of the individuals with a leisure home no longer had functional TV reception in the leisure home. However, it should be noted that these results can be partly explained by the fact that the survey was conducted during months when leisure homes are not used as frequently (December – February). Of the individuals with a leisure home with functional TV reception, 53 percent only have a digital TV box without a subscription in this home and therefore only have access to free TV channels. Nineteen percent say that they have a separate subscription for their leisure home and seven percent have a “multi-room” subscription that is also used in the leisure home. Thirty-eight percent switched to digital TV in their leisure home in conjunction with the switchover. Only four percent switched to digital TV in their leisure home when they switched to digital TV in their primary home. A relatively large share, eight

percent, say that they do not know when they switched to digital TV reception in their leisure home. In conjunction with the switchover, one-fourth of leisure home owners with functional TV reception said that they needed to purchase a new TV antenna.

Methodology

The survey was conducted via telephone interviews with 3,284 individuals between the ages of 18-74 using an independent random sample from the population register. The interviews were conducted December 2007 – February 2008; in other words, all interviews were conducted after the switchover in the terrestrial network had been completed. The response frequency was 63 percent. The sample losses can be explained by the following: the sample individual could not be reached after six to eight attempts (1,029 individuals), the individual did not want to participate due to the subject of the survey, lack of time or the individual’s principles (382 individuals) and the individual was out of town during the entire survey period (230 individuals). All of the results in the report, excluding those specifically relating to background variables that describe the sample, are nationally representative. The data was weighted at the individual level by gender, age and county; at the household level the data was weighted by household size.

Summary: Digital TV switchover among “refuseniks”

The following is a summary of the results from Mediavision’s analysis of how the digital TV switchover in the terrestrial network has affected and been received by persons who in previous surveys (also conducted by Mediavision) expressed scepticism regarding digital TV. In this and previous reports, this group is referred to as “refuseniks” since the respondents answered during the survey that they “never” intend to purchase the equipment needed to watch digital TV. The survey was conducted on assignment from the Digital TV Commission.

TV reception

The most common mode of reception among the “refuseniks” interviewed in this survey is cable TV (42 percent, of which 8 percent say that they have digital cable TV and 33 percent analogue cable TV). Thirty-three percent say that they have some type of digital terrestrial reception (19 percent have only FTA, 14 percent have a pay TV subscription/Boxer and two percent say that they do not know if they have FTA or pay TV). A relatively large group, eight percent, do not know what mode of reception they currently have.

Action taken in conjunction with the switchover

Despite the fact that the switchover to digital TV in the Swedish terrestrial network had already been completed at the time of the survey, almost 10

percent of the interviewed “refuseniks” did not know that the switchover had occurred. Twenty-eight percent of the respondents said that they were forced to take action in order to be able to watch TV after the switchover – either by purchasing a new TV antenna or a digital TV box. Most of those who said that they needed to take action currently have terrestrial reception or IPTV, but households with other modes of reception were represented in this group. Only five percent of cable households incorrectly answered that they needed to take action to keep their TV reception after the digital TV switchover in the terrestrial network. Forty-two percent of the “refuseniks” had switched to digital TV well in advance of the switchover. Thirty-two percent say that they switched to digital TV in conjunction with the actual switchover. Approximately 9 percent of the households waited until after the switchover and a large portion, 17 percent, say that they do not know when they switched to digital TV.

The effect of the switchover on TV consumption of the refuseniks

The number of TV sets among the group referred to as “refuseniks” changed slightly before and after the switchover in the terrestrial network: 15 percent say that their household does not have a TV with reception after the switchover (10.8 percent did not have TV reception before the switchover). This means that four percent do not have TV reception today as a result of the switchover. The number of respondents with two and three TV sets falls slightly after the switchover, at the same time as the number with only one functional TV increases slightly. Mediavision has also investigated if the switchover to digital TV had an effect on the TV consumption of “refuseniks”.

Among “refuseniks” who now have digital TV, 84 percent watch more than or the same amount of TV as they did before the switchover, while 10 percent say that they watch less TV than previously. In comparison to before the switchover, 45 percent of “refuseniks” watch more channels than before, which is slightly higher than the average for the entire population. Only four percent say that they watch fewer TV channels. Forty-one percent of the entire population say that they watch more channels and 6 percent say that they watch fewer channels, which is somewhat lower than before the switchover.

Information and opinions about the switchover to digital TV

Sixty-one percent of “refuseniks” believe that they were well-informed about the switchover, i.e. that they knew when the switchover would take place and how it would affect their household. Thirty-one percent say that they were somewhat informed, i.e. that they had heard about the switchover but did not know much more than that. Seven percent felt that they were poorly informed and did not know when the switchover would happen and were surprised when it did. A relatively larger share of “refuseniks” who currently have digital TV say that they were well-informed (69 percent) than “refuseniks” as a whole. The survey also shows that many “refuseniks” have changed their position and are in general positive or neutral about the decision to switch to digital terrestrial broadcast and the actual switchover itself. However, 21 percent have a negative opinion about the decision and 14 percent have a negative opinion about the actual switchover. Compared to the population as a whole, the previous “refuseniks” are slightly more positive

to the decision to switch to digital TV in Sweden. A reasonable explanation is that the switchover went more smoothly than the this group initially expected it to.

Methodology

The survey was conducted via telephone interviews with 500 individuals identified through Mediavision’s TV tracking and the five switchover stage surveys that were previously conducted on assignment from the Digital TV Commission during the years 2005-2007. The original sample was limited to individuals who had answered in previous interviews that they “never” intended to switch to digital TV. The ages of the survey participants ranged from 18-85 and the interviews took place between December 2007 and January 2008, i.e. after the completion of the switchover to digital TV in the terrestrial network. The original sample in Mediavision’s TV Tracking (15-74 year olds) and in the surveys after each switchover stage (18-85 years old) was a nationally representative two-stage cluster sample. Individuals in this report have participated in the TV tracking or in the stage surveys and were chosen because they had answered that they did not intend to switch to digital TV. This survey is therefore a combination of a two-step cluster selection and a quota sample. The sample loss rate, which totals 65 percent, can be broken down into the following: the person could not be reached (533 persons), the person did not want to participate due to the subject of the survey (249 persons), the person did not have time (97 persons) and the telephone number was no longer in service (50 persons).

Summary: The digital TV switchover among “75+”

On assignment from the Digital TV Commission and the Swedish Institute of Assistive Technology, Mediavision was requested to survey and analyze how the technology shift and the switchover was perceived by the elderly population in Sweden, here defined as 74-85 year olds. The analysis is based on 300 random interviews with individuals between the ages of 74 and 85 years old who live in single-family homes. This single-family restriction was applied due to the fact that persons living in single-family homes (detached houses, terrace houses, farms) were primarily affected by the switchover in the terrestrial network. Multiple-family properties are usually connected to a cable network and therefore were most likely not directly affected by the technology shift in the terrestrial network. The switchover to digital broadcasts in the terrestrial network occurred between September 19, 2005 and October 15, 2007. The technological shift was implemented in five geographical stages and is now completed. The following report analyzes how the elderly have experienced the switchover, from information about the switchover to handling and installation of any needed equipment as well as general opinions about the switchover and the underlying political decision. The following is a summary of the results from Mediavision’s analysis of how the digital TV switchover in the digital TV switchover has affected and been perceived by 74-85 year olds, which was carried out on assignment from the Digital TV Commission and the Swedish Institute of Assistive Technology.

TV reception

The majority of the survey age group, i.e. 70 percent of 74-85 year olds in Sweden not currently living in an apartment, had terrestrial TV reception at the time of the survey. This group was therefore directly affected by the technology shift in the terrestrial network. An additional consequence of the switchover is that pay TV options were suddenly available to households that previously only had (analogue) terrestrial reception, although it was still possible for persons with terrestrial-only reception to choose a free TV package (free to air, or FTA). An analysis of the elderly population shows that a majority, 46 percent, chose the free alternative. Approximately 20 percent chose terrestrial pay TV (two percent do not know which type of terrestrial reception they have). When this survey was conducted (December 2007), a total of 82 percent of the survey population had some form of digital TV reception (i.e. responded that they had one or more of the following distribution platforms: digital cable TV, digital terrestrial reception, digital satellite or IPTV). After answering a control question about whether or not the household had a digital TV box (i.e. the technical equipment that is necessary to be able to receive a digital TV signal) only 75 percent answered affirmatively, which indicates that there is a certain degree of confusion surrounding the uptake of digital TV. This type of uncertainty has also been very evident in other surveys, which leads to the conclusion that awareness of modes of TV reception is not directly dependent on age.

Action taken by the elderly in conjunction with the switchover

Sixty-three percent of the elderly say that they switched to digital TV in conjunction with the actual switchover in the terrestrial network. Approximately four percent answered that they waited until after the date of the switchover to purchase the equipment needed to be able to receive a digital TV signal. More than 60 percent say that they received help in selecting their digital TV equipment. Among the most elderly (80-85 year olds), this share reaches almost 70 percent. The majority say that their children were the primary source of help when selecting the digital TV equipment, but that radio and TV sales personnel also provided advice and assistance. A large portion also received help when connecting their digital TV box (ca 70 percent); again, the respondents’ children were the primary source of assistance. Among the elderly with digital TV who said that they did not receive help with the technical installation (in total 22 percent), almost 80 percent said that it was very easy or fairly easy to connect the box, while 15 percent felt that it was fairly difficult (no one answered very difficult, but eight percent could not say if it was difficult or easy).

The effect of the digital TV switchover on the TV consumption of the elderly

Similar to the trend in the population as a whole (18-74 year olds), the number of TV sets among the elderly decreased slightly after the technological shift in the terrestrial network. The number of two and three TV sets fell slightly in conjunction with the switchover at the same time as the number of households with only one functioning TV set increased. The most common reason given

for this is that the survey participants had not purchased digital TV boxes to all of their TV sets. Mediavision has also analyzed if the switchover to digital TV affected the elderly’s TV consumption. Among the elderly that have digital TV, more than 80 percent say that they watch more or as much TV after the switchover than they did before, while 17 percent say that they watch less TV than previously. Primarily elderly women and the most elderly (80-85 years old) say that they watch less TV after the switchover in the terrestrial network. It is also interesting to note that almost one-third say that they watch more channels today than they did previously. In order to be able to receive a digital TV signal, it is necessary to have a digital TV box with a remote control. For many households that previously had analogue terrestrial reception, this box is new. Therefore, questions were asked about how the new equipment affected TV viewing, i.e. if it was more difficult than before from a pure technical perspective to watch TV after the switchover in the terrestrial network. A relatively large portion of the elderly, 25 percent, strongly agreed or partly agreed with the statement that it is more difficult to turn on the TV after the switchover. Almost 20 percent feel that it is more difficult to change the channel and 14 percent agreed (strongly or partly) that it is more difficult to raise the volume. More than 20 percent have experienced it to be problematic to have more remote controls than previously. Elderly women and the most elderly (80-85 year olds) were slightly over-represented in this group.

Information and opinions about the switchover to digital TV

Almost 60 percent of the elderly feel that they

were well-informed about the switchover, i.e. they knew when it would take place and how it would affect their household. More than 30 percent said that they were “partly informed”, i.e. that they had heard about the switchover but did not know much more than that. Three percent felt that they were “poorly informed” and did not know when the switchover was going to take place. The majority of the elderly were informed via TV or newspapers, while the third most common source of information was friends and family. An overwhelming majority say that they are “positive” or “neutral” to the decision to switch to digital terrestrial broadcasts and to the actual switchover itself. However, seven percent say that they have a negative opinion about the decision and nine percent have a negative opinion about the actual switchover.

ceased to be broadcast analogue in the terrestrial network. The survey sample is an independent random sample, which means that the population register is used to select the names of the survey participants for the age group 75-85. The interviews were then held with the person in the household who had the most knowledge about the household’s TV reception. This step was taken to ensure that the answers would be as close to reality as possible and to minimize the number of “don’t know” answers. The response frequency for the survey was 63 percent.

294 Methodology

This survey was conducted via telephone interviews with individuals between the ages of 74-85. Interviews with individuals older than 74 are usually linked to a relatively high sample loss rate and the age range was therefore limited to 85. Only individuals living in terrace houses, single-family homes, farms or detached houses were interviewed, i.e. those living in apartments were excluded. In total, 300 individuals between the ages 74-85 years old were interviewed in December 2007, i.e. after all analogue TV channels

The surveys were conducted by Mediavision on assignment from the Digital TV Commission. For questions related to the surveys and the results, please contact:

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References and further reading:

Information that is directly related to the digital TV switchover

- Division for Media, Ministry of Culture www.regeringen.se
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- The Swedish Disability Federation www.hso.se

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- Satellite: SES Sirius www.ses-sirius.se

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- Com Hem www.comhem.se
- Canal Digital www.canaldigital.se
- Boxer www.boxer.se
- Viasat www.viasat.se
- Telia www.telia.se

Broadcasters

- SVT www.svt.se
- TV4 www.tv4.se
- Kanal 5 www.kanal5.se
- TV3 www.tv3.se

The radio and television industry

- The Swedish Association of Antenna & Cable TV Suppliers organisation www.cant.se
- Consumer electronics, radio and television industry www.elektronikbranschen.se

The Digital TV Commission would especially like to thank the individuals and project teams whose commitment and long working hours have helped make the digital TV switchover possible. The number of blank screens would have been much greater without our collaboration!

296

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297



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299

