行政院所屬各機關因公出國報告書

（出國類別：考察）

考察德荷英數位電視發展現況

及參加2003 歐洲廣播電視年會（IBC）報告

出國人　服務機關：交通部電信總局

職　稱：簡任技正、簡任技正

姓　名：陳子聖、曹策宏

出國地點：德國、荷蘭、英國

出國期間：92年9月11日至9月21日

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考察德荷英數位電視發展現況及參加2003歐洲廣播電視年會(IBC)報告

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出國類別: 考察

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分類號/目: H6／電信　／

關鍵詞: 數位電視，機上盒，IBC，MHP

內容摘要: 隨著台灣數位電視的開播，有關數位電視的推廣政策及商業經營模式一如數據廣播(Data Broadcasting)、多媒體家庭平台（MHP）、傳輸平台規劃建置、數位內容應用等，仍有待吸取國際經驗；而國際廣播年會（The International Broadcasting Convention, IBC）是年度國際間重要的廣播產業展覽會，德國柏林-布蘭登堡地區自2002年開始以「逐區」方式進行多頻道數位電視開播，荷蘭廣播電視經營生態環境與台灣極類似，英國二〇〇二年國家廣播公司（BBC）推出免費數位電視服務之成功經驗，對世界各國數位電視之推動有示範作用。因此台灣數位電視委員會及台灣數位視訊協會共同主辦，組成「數位電視未來營運探討歐洲考察團」，成員除廣電公協學會成員，尚包括政府單位（電信總局、新聞局），學界（中央研究院、政治大學、大同大學）、無線廣播電視台（台視、中視、華視、民視、公視），內容提供者（大愛電視、惠聚多媒體、華康科技等），以及設備廠商（視傳科技、高昕科技等）等國內產官學研代表。參訪日期自92年9月11日至9月21日。行程除了造訪德國柏林、荷蘭阿姆斯特丹及英國倫敦等的政府機構及相關產業，並實地考察歐洲當地數位電視推廣情況及經營模式等經驗，並參觀荷蘭阿姆斯特丹之2003 IBC展覽。

本文電子檔已上傳至出國報告資訊網

目錄

考察德、荷、英數位電視發展現況

及參加2003 歐洲廣播電視年會（IBC）報告

壹、前言

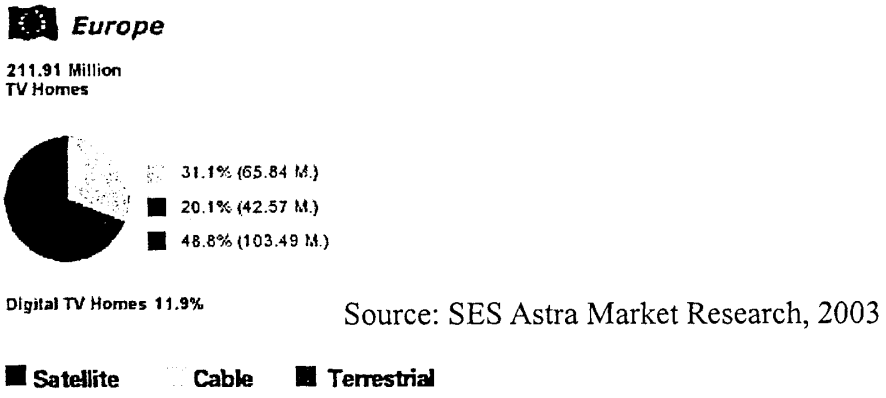
隨著台灣數位電視的開播，有關數位電視的推廣政策及商業經營模式—如數據廣播(Data Broadcasting)、多媒體家庭平台（MHP）、傳輸平台規劃建置、數位內容應用等，仍有待吸取國際經驗；而國際廣播年會（The International Broadcasting Convention, IBC）是年度國際間重要的廣播產業展覽會，德國柏林-布蘭登堡地區自2002年開始以「逐區」方式進行多頻道數位電視開播，荷蘭廣播電視經營生態環境與台灣極類似，英國二〇〇二年國家廣播公司（BBC）推出免費數位電視服務之成功經驗，對世界各國數位電視之推動有示範作用。因此台灣數位電視委員會及台灣數位視訊協會共同主辦，組成「數位電視未來營運探討歐洲考察團」，成員除廣電公協學會成員，尚包括政府單位（電信總局、新聞局），學界（中央研究院、政治大學、大同大學）、無線廣播電視台（台視、中視、華視、民視、公視），內容提供者（大愛電視、惠聚多媒體、華康科技等），以及設備廠商（視傳科技、高昕科技等）等國內產官學研代表。參訪日期自92年9月11日至9月21日。行程除了造訪德國柏林、荷蘭阿姆斯特丹及英國倫敦等的政府機構及相關產業，並實地考察歐洲當地數位電視推廣情況及經營模

式等經驗，並參觀荷蘭阿姆斯特丹之2003 IBC展覽。

貳、行程概要

九月十一日	啟程，自中正機場搭機經香港、法蘭克福抵達柏林。
九月十二日	拜訪德國電信、ARD 公司。
九月十三日	參觀 SATURN 數位電視銷售賣場，轉往荷蘭。
九月十四－十五日	參觀荷蘭 IBC 國際廣播年會展覽。
九月十六日	拜訪荷蘭 Digitenne 公司，轉往倫敦。
九月十七日	與 DTG、ITC 會商。
九月十八日	與 DCF、Free View 會商。
九月十九日	拜會 BBC。
九月二十－二十一日	整理資料，自倫敦、法蘭克福、曼谷返抵台北。

參、考察德、荷、英數位電視發展情形

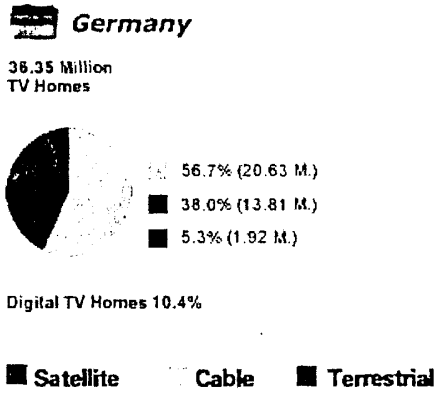


歐洲地區地域廣闊及文化與語言之間的差異，各國的電視媒體生態各不相同，以全歐收視的 211 million 家庭中，無線電視的佔有率 48.8%為大宗，有線電視的佔有率 31.1%，衛星／SMATV 的比例則為 20.1%。

但截至 2002 年底，在全歐已經營運的數位電視系統中，數位衛星電視佔有 77%，數位有線電視佔了 19%，數位無線電視僅佔有 3%左右。因此在佔有大部分收視觀眾的無線電視媒體方面，仍然有相當大的數位化成長空間。

一、 德國

德國柏林-布蘭登堡地區於 2003 年 8 月 4 日完成全世界第一個由傳統類比電視轉換至數位電視之成功典範，其經驗足堪各國參考。



(一)數位電視轉換之導入

1.試播計畫

緣自 1997 年 8 月，在德國電信、柏林-布蘭登堡地區地方媒體監理機關（負責分配數位無線頻率）（mabb；Mediananstalt Brandenburg Berlin）及 SFB（公共電視 RBB 之前身）開始試播單頻網數位電視，第一個由類比頻道轉換至數位頻道為 Ch51(n-tv)，其調變方式為 16 QAM （FEC=2/3）已可達成室內行動接收，並吸取其他國家數位轉換如英國和西班牙採付費電視之失敗經驗，使德國了解數位電視須採免費方式經營方可成功。

2.導入政策

1998 年 11 月修訂邦際媒體服務條約有關數位電視之轉換，聯邦政府規定數位轉換須於 2010 年前完成，並於 2001 年 7 月通過法規，由柏林-布蘭登堡地區首先進行轉換工作，mabb 於 2001 年 8 月 23 日宣示柏林-布蘭登堡地區之數位電視導入前景，同年 11 月 29 日與廣播電視業者簽訂數位轉換協定書，並決定給予財務支援。在邦際廣播電視法(Interstate Broadcasting Treaty)的規範下，也於 2002 年 2 月 13 日由 mabb 與德國公共電視台 ARD、ZDF、RBB 以及商業廣播電視公司 RTL、ProSiebenSAT.1 Media AG 簽訂數位轉換時程之合作備忘錄。2002 年 2 月 10 日，德國電信及郵政監理機關(RegTP)依據電信法(TKG)指定數位電視之頻率，從 2002 年 10 月 31 日數位無線電視

開播到 2003 年 8 月 4 日關閉類比訊號，完成類比至數位信號之轉換，在不到一年的轉換時間仍維持無線類比及數位訊號同步播出。

3. 政策分析

柏林-布蘭登堡地區維持數位、類比同步播出時間不到一年。其一原因為德國鄰國多，容易造成干擾，而頻率不足導致指配不易，因此數位頻道開播之後，類比頻道須儘快交回以供再分配使用。另外更重要的是為節省節目傳播成本，全德國共有 300 個高功率發射站、9000 個低功率發射站，每年須花兩億五千萬歐元，只為 7%無線接收收視戶，同步發射(simulcast)數位、類比訊號的成本太高，因此必須盡量縮短同步播出的時間。

4.轉換原則

至於柏林-布蘭登堡地區轉換可分三階段，第一階段為至少一個大功率類比頻道轉換至數位頻道，以展示數位電視品質，並吸引民眾購買數位接收機；第二階段為大功率發射機轉換至數位發射，商業台類比傳輸停止發射，而公共電視台則透過低功率發射信號；第三階段為關閉所有類比頻道。

5.頻譜規劃

至於其規劃全國數位電視頻譜分配為 173MHz—239MHz 共七個頻道，每個頻道為 7MHz，另 470MHz—862MHz 共四十三個頻道，每個頻道為 8MHz，前述每個頻道可容納四個節目，其中之空頻道均指配做數位電視使用。

（二）數位電視之轉換過程

1. 轉換初期

在柏林-布蘭登堡地區開始推動數位無線電視時，僅收看無線電視的只有 16 萬戶，另外有 9 萬戶家中的第二台或第三台電視機是用無線接收的，而全區有 1800 萬收視戶。在購買機上盒的家庭中，60%是無線電視收視戶，但有線電視收視戶佔 26%，衛星電視收視戶佔 14%。

2. 轉換過程

邦際廣播電視法(Interstate Broadcasting Treaty)授權 MABB 分配數位頻譜，七個 MUX 除了分配給交回類比公共電視和商業電視台之外，另保留兩個 MUX 開放給新的業者申請。柏林-布蘭登堡地區數位無線電視推出的頻道是漸進式的，於第一階段 2002 年 10 月 31 日推出兩個單頻網，可接收八個節目頻道。而第二階段，也就是 2003 年 2 月 28 日開始，所有商業台的類比訊號率先關閉，大功率公共電視(除

CH 39 外)轉至數位頻道，其類比節目則以小功率播出，直至第三階段 2003 年 8 月 4 日全面關閉類比訊號為止，已經可以收到無線數位電視 27 個節目頻道。

3. 用戶收視

數位轉換的過程順利，至 2003 年 7 月底數位機上盒之銷售達 17 萬台，而簡易接收型之數位機上盒售價由轉換初期每部 200 歐元降至每部 100 歐元以下，普及率因而大增。

4. 宣導活動

至於柏林-布蘭登堡地區轉換期間有關收視戶權益之配套措施，在邦際廣電法（Interstate Broadcasting Act）中要求有線電視系統台及衛星電視必載已關閉無線電視台之類比節目，因此有線電視和衛星電視用戶的收視權益將完全不會受到影響；政府並提供各傳輸模式的詳細資料，讓消費者據以判斷未來最適合自己的電視接收模式，譬如由頻道商、傳輸公司及監理機關合作自 2002 年春天在電視台各頻道以地方新聞的方式，告知觀眾數位轉換及技術細節之資訊。2003 年 2 月時，政府更以信件告知每一個收視戶，強調只有從戶外天線接收者，才會受到數位轉換的影響，而此時正值轉換主要時期，亦曾造成一波機上盒的銷售高峰，而各電器行亦以宣傳品等，配合宣導無線數

位電視轉換之工作。至於政府社福政策包含有業者提供對低收入戶津貼每月 8.5 歐元的租機專案，但此情形較少；另外則對家中僅收看無線電視者提供較低價之機上盒。

（三）轉換結果

由於柏林-布蘭登堡地區數位轉換政策明確目標在節省節目播出成本、類比頻率收回再使用及達成行動接收（戶內及戶外），使得其成功經驗成為德國其他地區之模範，並將以逐區（island by island）的方式，繼續由幾個大都市開始逐步建立全國的單頻網，後續如科隆/波昂（Koln/Bonn）兩大城將在 2004.1.1 展開數位轉換，其他如漢諾威（Hannover）等大城亦將於 2004-2005 陸續展開數位轉換之工作。預計在 2010 年完成全國類比頻道的回收。數位無線電視傳輸的參數，則均是以 16QAM 為之。

（四）成功經驗與未來展望

1.成功經驗

- 政策明確；

- 轉換時機恰當；

- 電視業者及消費者的支持；

- 類比電視之停播及快速進行數位轉換；

- 對於商業電視台之補助；

- 以部份收視費發展數位電視；

- 一次買機上盒即可免費收視；

- 數位機上盒降價；

- 導入宣傳完備。

2.未來展望

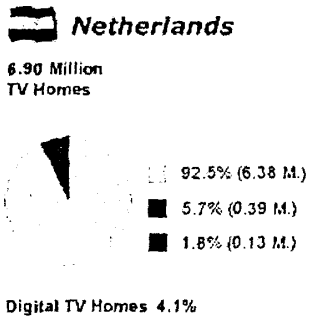
- 柏林經驗帶動全國數位轉換之典範；

- 以可攜式及行動接收為主，並能與行動通信聯網；

- 以免費收視為主；

- 以開放架構（MHP）提供互動式服務。

二、荷蘭



（一）數位電視發展現況

荷蘭的無線電視，相較於全國 92%以上是透過有線電視收看電視

節目，為相對弱勢。2001 年六月，荷蘭的部長會議（Dutch kabinet, Council of Ministers）才通過將五個 Mux 中的四個開放給商用的無線電視業者，僅留下一個 Mux 給公共電視台業者。新業者所提供的節目中，必須至少 80%為一般影音節目，其餘頻寬則可以提供資訊廣播等加值服務。目前由公共電視製作公司、商用無線電視台、傳輸業者及電信業者等共同成立的數位聯盟 Digitenne，於 2003 年四月開始在阿姆斯特丹地區進行地面數位無線電視商業廣播，提供 24 個標準畫質電視頻道以及 16 個 radio 服務。由政府授與 Digitenne 十五年特許執照，目前該區數位訊號覆蓋率約為 80%，並預計 2 至 3 年內陸續擴展數位傳輸覆蓋範圍至全國。

（二）用戶收視

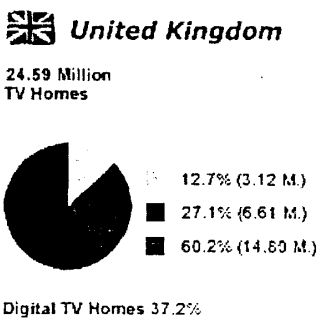
數位地面無線電視收視服務由 Digitenne 整合系統營運，以付費電視服務為主，競爭目標設定為有線電視系統，以相對低廉之收視費用提供 20~30 個優質電視頻道作為替代性服務選擇，業務上主推室內天線無線接收(in-house reception with small in-door antenna)。其重要條件式接取系統（CA）策略之一，為要求 CA 系統廠商需承諾機上盒內之 CA 系統可以透過電視訊號下載更換為其他廠商產品，並計畫每四至五年即更換一次 CA 系統。

經 Digitenne 採用之 CA 系統必須支援 CA 同步加密

（simulcrypt）。經 Digitenne 認證之機上盒必須內建 IC 卡讀卡機並通過三家 CA 廠商認證。經 Digitenne 認證之機上盒同時必須內建共通載入程式（Common Loader）以支援經由電視訊號下載系統軟體更新。基於成本因素考量，Digitenne 並不主動支持使用共通介面（CI）之 CA Module 模組之機上盒產品。Conax 機上盒應是最大的贏家，其行銷策略採用無忠誠度的政策，對於還不能確定付費市場大小的營運者來說省去大筆財務負擔，同時又可以在短時間內快速的讓 CA 市占率提高，並加強機上盒廠商移植該條件式接取的意願。傳輸的部分則使用 64QAM，FEC=2/3，先由阿姆斯特丹、Randstad 開始試驗，然後再轉移到全國。

由 Digitenne 商業營運機制及水平整合市場的策略（內建 CA、機上盒之認證及提供 Active Antenna），確保未來收費及移動接收的可能性，可以看出該公司的經營方向。

三、英國



（一）數位轉換發展現況

1.啟動數位轉換

在英國衛星電視超過60%的獨特生態，與歐陸其他國家以無線或有線電視為主的媒體生態相反。因為衛星轉頻器成本昂貴，造就了營運者推動數位化的強大動力，在1998年就已經完成了大部分直播衛星的數位化工作，數位地面與有線電視則分別於1998及1999後期開始推動數位化，數位地面電視於1998年11月以六個MUX提供標準畫質節目，免費與付費節目並行，電波涵蓋率達70%，播送參數主要以DVB –T, 2K carriers, 64QAM,傳輸速率為24Mb/s，為MHEG平台，而六個MUX中二個為分配給既有類比業者，四個給新進業者，而OnDigital則以三個MUX提供付費服務，然卻因沿用與有線及衛星電視業者的收費經營模式與之競爭但又無節目特色，以致重大虧損，另因採用2K carriers, 64QAM調變參數使電波涵蓋不足，終至停止營業。

2.生態重整

2002年3月在OnDigital倒閉後，繳回其三個MUX之執照，設備廠Pace於2002年4月推出100英鎊的機上盒。ITC於2002年8月將回收的MUX執照重新分配一張給BBC和二張給只負責信號發射傳輸的Crown Castle公司，並於2002年十月推出Freeview平台(由

BBC、Crown Castle 及 BSkyB 三家公司共同投資)，提供免費收視的數位無線電視，將調變參數更改為 16QAM，雖然降低傳輸速率，但擴大了電波涵蓋率，以 80 個傳輸塔台達成 74%的覆蓋率。

3.發展現況

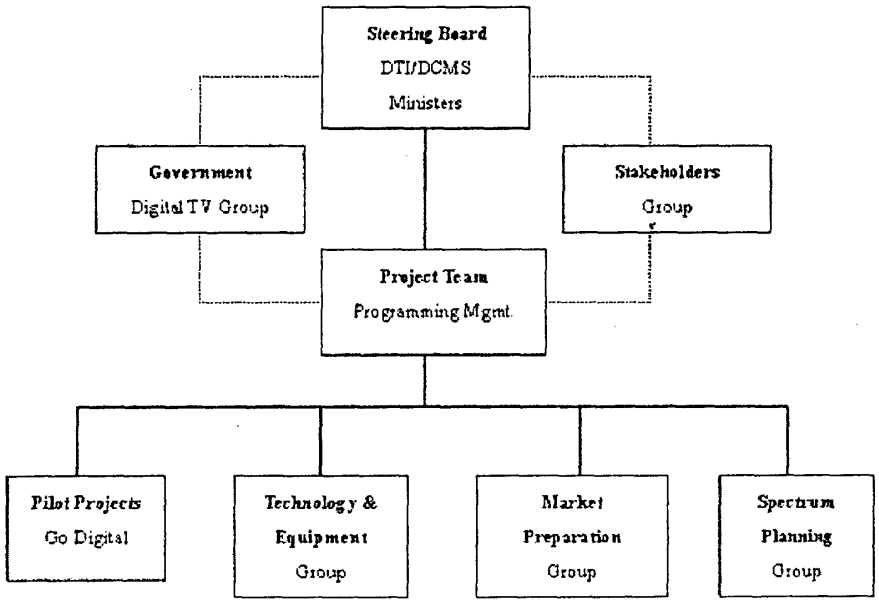
英國是目前全世界數位電視普及率最高的國家，至 2003 年第一季為止，數位衛星電視(BskyB) (97%涵蓋率)有 700 萬訂戶，數位有線電視(NTL 及 Telewest) (50%涵蓋率)有 220 萬訂戶，收看數位無線電視(Freeview) (80%涵蓋率)的戶數也達 160 萬，另有數位用戶迴路(DSL TV)訂戶，全國收看前述各平台數位電視的收視戶約一千八百萬戶，比例達 43.9%，為全世界數位化程度最高的國家，預計 2003/4 數位電視收視將快速成長，付費電視則緩增，規劃 2006-10 可完成數位轉換。雖各平台業者的經營方式相異，但節目之需求與日俱增，在 2001 年到 2002 年，的確使英國數位電視內容的外銷就增長了 20%

目前英國的無線電視生態，主要是六個數位網路以及五個類比網路並存，數位電視的播送參數主要以 DVB –T, 2K carriers, MFN 為主其中 4 muxes: 16QAM; FEC=3/4, Tu=1/32；2 muxes: 64QAM, FEC=2/3, Tu=1/32，節目部分目前全部的節目頻寬為 120Mb/sec，提供 28 個電視節目,16 個廣播節目,4 個數據廣播，數位訊號的傳輸功率比類比信號降低 17dB 傳送。

（二）推動數位電視計畫

1.推動小組架構與功能

英國為了推動數位電視發展係由內閣位階（Steering Board）負責整個行動政策，由負責媒體內容的文化媒體體育部 DCMS(Department of Culture, Media and Sport)和貿工部 DTI(Department of Trade and Industry)與產業界共同研擬數位轉換計畫，兩部的部長為主席共同決定數位轉換之時程及策略，交由 Project Team 執行。2002 年公佈數位電視行動方案(Digital Television Action Plan)如附件，第一階段的任務是鼓勵消費者開始可收視任何一種數位電視。此跨部會的推動計畫小組架構如下圖：



數位電視小組（Government Digital Television Group，DTG）為政府各部門與數位電視發展相關的人員所組成的小組，目標在於推動英國的數位轉換，參與部門有直屬英國首相的行政革新小組的 Office of E-envoy 負責推動電子化政府工作等的各單位；另由於 DVB 組織的所訂出的規格必須兼顧不同的環境，有許多規格僅把架構定義出來，在實際的應用上，則容易出現許多次規格，產生彼此不相容的問題。DTG 的工作就在於以第三者的角度在廣播業者以及收視戶之間扮演橋樑的角色，公布的 D-book、I-book、R-book 等都對業界有相當正面的幫助。，。這個實驗室負責的工作包括 Conformance Testing、Test Materials、Product Development、Over-air download、Application Testing，從 STB 的設計、測試到升級，未來還包括互動節目的相互測試，這個組織的工作會為業者及消費者省去許多不必要的困擾。

2.目前主要工作

為期推動數位電視轉換之順利，該計畫推動小組目前主要焦點任務在：成本效益分析、數位電視頻譜規畫、收視之可靠度與方便性（互通與人性化）、市場行銷與宣導、形成共識等。

3. 數位轉換之規劃

英國政府推動數位轉換之策略在保持平台中立、照顧消費者權益及業者合作，關閉類比電視的時程為 2006-10，但須符合下列條件：

- 數位電視涵蓋率達 99.4%(與目前類比電視涵蓋率相同)；

- 大多數人都可以負擔得起數位轉換所需的器材；

- 數位電視收視戶達 95%。

三、成功經驗

(一)免費收視經營模式創佳績

Freeview 免訂費、只需買機上盒的方式獲得消費者的認同，免訂費的商業模式吸引了原本對付費電視沒興趣的用戶，對英國政府來說，這是相當成功的數位轉換策略。

(二) 發展內容吸引觀眾

原來類比無線電視用戶只能收到 BBC1、BBC2、ITV、Channel4、Five 五個台，Freeview 製播的多個全新數位頻道是促成轉換成功的關鍵，只花台幣 5600 元買一個數位機上盒之後，卻可以收到 30 個電視頻道外加 11 個廣播頻道。表示內容業者只要有好的節目就有機會推出付費服務。

（三）加值服務創新商機

業者除了自己新製數位頻道目之外，剩餘頻寬還可以做各種資訊服務。如遊戲頻道的經營就擁有一定基礎的收視群，從遊戲上獲利已成目前主要商業模式。

（四）平台之策略聯盟

Free-to-View 的市場由 Freeview 炒熱後，確實對 BskyB 產生相當大的威脅。在一般家庭的接收環境裡，大部分的人都認為，將來的電視家庭，將會發展出付費與免費電視共存的情形；如客廳裡放的是付費的電視，擁有 300 個頻道，但是臥室以及書房，就使用不需天線、不需收費的 Freeview，因此：收費與不收費，無線與有線／衛星／電信之間的相互關係，不應該用「互斥」的觀點來思考，而應該用較為正面的「互補」觀點來發展。

肆、參觀荷蘭 IBC 展覽

一、韓國廠商這次集體在 IBC 上展覽，包括 MHP 機上盒、立體攝影機等，顯示了韓國接收機製造商對於 MHP 的重視。

二、Cisco 以及 BigBand 的參展，可以讓廣播業者在節目遞送及傳輸的鏈路及設備方面，以 IP 作為另一選擇方案。

三、Viaccess、NDS、Nagravision 等以條件式鎖碼系統為主要業務的公司，除了 CA 外，亦有關於非廣播鎖碼的產品展出，如 Nagravision 展出對 VOD 的影音鎖碼解決方案，Viaccess 展出 On-line Rights Manager 以及 Viaccess-VOD 等產品，可以看出業界對 de-scramble 之後的資料鎖碼的需求。

四、在 DVB 的會場上，ADB 展出 MHP 機上盒，Osmosys (Open Standard Middleware & Open Systems)展示 MHP 的軟體發展工具以及互動節目解決方案；Teamcast 則展示其支援 DVB-FECT、DVB-T 的機上盒。

五、Alticast 展出二十多種互動電視節目，包括 VOD、遊戲、tcommerce 以及 MMS 應用，另外還展出該公司新發展出的觀眾行為監控系統。

六、Galaxis 是德國著名的機上盒製造商，展出以 TOSHIBA 單晶片做成的 MHP 機上盒，該機使用 LinuxTV 2.0。另外還有該公司的 PVR 以及 EPG 應用。

七、SofiaDigital 展出 Sofia Backstage Publisher，可以用來播送及管理 MHP 節目，該公司並且提供一些互動節目所需的模組(如資訊服務、高階電視節目、廣告購物、即時服務、EPG、Game、SMS/MMS 的連接等)，在攤位上並且聯合德國互動節目製作公司，展示使用該公司開發工具所製作的互動節目包括電視購物、互動廣告、益智問答等。

八、Strategy & Technology 展示 MHP stream-generation 軟體以及稱為 mheg.tv 的 MHEG-5 解決方案。

伍、參訪摘要

	德國	荷蘭	英國
開播現況	自 2002 年 9 月起，由柏林地區開始，進行地面無線電視廣播數位化；柏林地區並已於 2003 年 8 月中停止類比電視訊號廣播。其他地區將依數位訊號覆蓋狀況陸續分區切換。	目前由商業系統業者 Digitanne 獨家取得數位地面無線電視執照 15 年，並於 2003 年 4 月起在阿姆斯特丹地區進行業地面數位無線電視商業廣播，目前數位訊號覆蓋率約為 80%，並預計 2 至 3 年內陸續擴展數位傳輸覆蓋範圍至全國。	1997 年 6 組數位地面無線電視頻譜執照開標並開始全國性傳輸塔台建置及廣播，目前已達成 74%以上之全國訊號覆蓋率；有線部份 ntl 於 1998 年起與衛星直播電視服務業者 BSkyB 合作，開始提供數位電視節目服務。
類比頻道回收規劃	依據歐盟協議，於 2010 年以前，全面完成電視廣播數位化； 類比頻道回收時程目前定於 2010 年。	依據歐盟協議，於 2010 年以前，全面完成電視廣播數位化。 類比頻道回收時程目前定於 2007 年。	依據歐盟協議，於 2010 年以前，全面完成電視廣播數位化。 透過電信法訂定類比頻道停播條件，包括數位電視訊號覆蓋率、無線電視收視戶之數位接收比例、數位電視接收設備普及率等，時程目標則預估於 2010 年前可達成。
數位頻道營運方式	電視台主要為公共電視體系。 頻道業者收入來源以國民電視使用執照費(電視稅)及電視商業廣告為主。	電視頻道包含公共電視、本國商業電視頻道、以及境外頻道。 頻道業者收入主要為電視商業廣告。	電視台主要為公共電視體系，尤以 BBC 為重要之頻道供應者。 頻道業者收入來源以國民電視使用執照費(電視稅)及電視商業廣告為主，其中電視稅收入完全由 BBC 統籌運用。
	地面無線、有線電視之訊號傳輸業務皆由德國電信 (Deutsche Telekom)承攬。	數位地面電視廣播訊號傳輸部分委由傳輸公司 Nozema 統一負責。	地面無線電視廣播訊號傳輸業務由 Crown Castle (原兩家 BBC 之傳輸部門)及 ntl 兩家傳輸公司平分市場。另 ntl 亦承攬大部分之衛星及有線電視廣播訊號傳輸業務。

	公共電視台 ARD 結合德國各重要電視台業者，成立數位地面無線電視服務品牌 ARD Digital，負責數位電視業務推廣，以提供免費收視服務。 各地有線及衛星電視系統服務為付費收視。另有少數免費收視之國際衛星直播電視節目。	數位地面無線電視收視服務由 Digitenne 總攬系統營運，以付費電視服務為主，競爭目標設定為有線電視系統，以相對低廉之收視費用提供 20~30 個優質電視頻道之替代性服務選擇，業務上主推室內天線無線接收 (in-door portable reception)。 各地有線及衛星電視系統服務為付費收視。另有少數免費收視之國際衛星直播電視節目。	1998 年數位地面無線電視服務開始時，其中三個頻譜執照由 iTV Digital 取得並經營付費電視服務；其他頻譜(BBC, D3&4, SDN)則為免費收視。iTV 於 2002 年結束營業並歸還頻譜執照，由 BBC/Crown Castle 團隊取得其頻譜執照，並結合 BBC 原有之一個頻譜執照後，整合 20 餘電視頻道推出 Freeview 品牌之免費收視服務。 各地有線及衛星電視系統服務為付費收視。另有少數免費收視之國際衛星直播電視節目。
用戶收視	數位地面電視廣播之機上盒完全由消費者自行於零售通路購買。	數位地面無線電視廣播由消費者自行於零售通路購買經 Digitenne 認證之機上盒，並另外向 Digitenne 購買收視智慧卡(Smartcard)及室內用電視天線(目前促銷期間係免費供應)。	數位地面電視廣播之機上盒完全由消費者自行於零售通路購買。 業者組成民間單位 DTG 進行 DVB-T/MHEG5 機上盒之功能認證及推廣等工作。
	衛星及有線付費電視服務之機上盒以系統服務業者提供為主。 收視戶可自行自零售通路購買衛星電視機上盒接收免費衛星直播頻道節目。	衛星及有線付費電視服務之機上盒以系統服務業者提供為主。 收視戶可自行自零售通路購買衛星電視機上盒接收免費衛星直播頻道節目。	衛星及有線付費電視服務之機上盒以系統服務業者提供為主。 收視戶可自行自零售通路購買衛星電視機上盒接收免費衛星直播頻道節目。
條件式接取系統相關政策	由於數位地面無線電視營運以免費收視為主，政府並無條件式接取系統相關政策。	政府並無條件式接取系統相關政策。 數位無線電視服務業者 Digitenne 以付費服務為主要經營方式，但營運上則力求不受特定系統限制。	由於數位地面無線電視營運以免費收視為主，政府並無條件式接取系統相關政策。

陸、結論與建議

一、 結論

在前述各國發展無線數位電視過程及成果雖各不相同，然其經驗足堪借鏡之處摘述如下：

（一）政府訂定明確的導入政策

這次參訪的三個國家，數位化的過程中，政府的角色以及政策的走向均極為明確，並都有政府強力的介入。在各國發展無線數位電視過程中，雖偶有挫折，但各國皆視無線數位電視為產業發展之確定目標，持續投入。而數位化後類比頻道回收的政策各國不一，但如果能對類比頻道回收之期程及步驟主動進行詳細規劃，應可實際對大眾發揮宣示作用並加速數位化進程，如德國以逐區(island by island)之方式提前完成柏林地區頻道的轉移即為一例。

（二）內容是數位電視發展成功關鍵

綜合德荷英三國數位電視地面廣播發展現況，播出標準畫質的多頻道電視數位節目均為30個左右， 是主要的運用，並謹守影音節目製作本分，然新的數位頻道之營運創意(如互動服務、高畫質節目、行動接收等)均處於試播階段，尚不符合現有頻寬的成本；因此分配資源進行新型態互動電視或是多媒體服務的研發固然不可或缺，但數位化過程對商業電視台之業務衝擊亦須予以慎重考量。

（三）商業經營模式之確立

無論是商業電視或公共電視，傳統上消費者認為無線電視應該是免費的，數位無線電視市場想要推付費服務會有頻寬不夠及費用太高的問題，營運初期多為Freeview或小額收費，未來尚有做加值服務的空間；另行動接收（mobile receiption）的市場目前尚未明朗，但未

來仍會以無天線、室內移動為主；至於互動電視的市場走向，將會走向以 MHP 為主要的系統架構，但是真正的應用將會等待 MHP 機上盒價格普及才會有進一步的發展。

二、建議

（一）政府訂定導入政策

政府相關單位訂定高畫質與優質數位電視內容及數位終端接收設備（機上盒及數位電視接收機）之導入政策，使業者可提供更吸引消費者之收視節目內容與價廉之接收設備，提升大眾接受之程度。

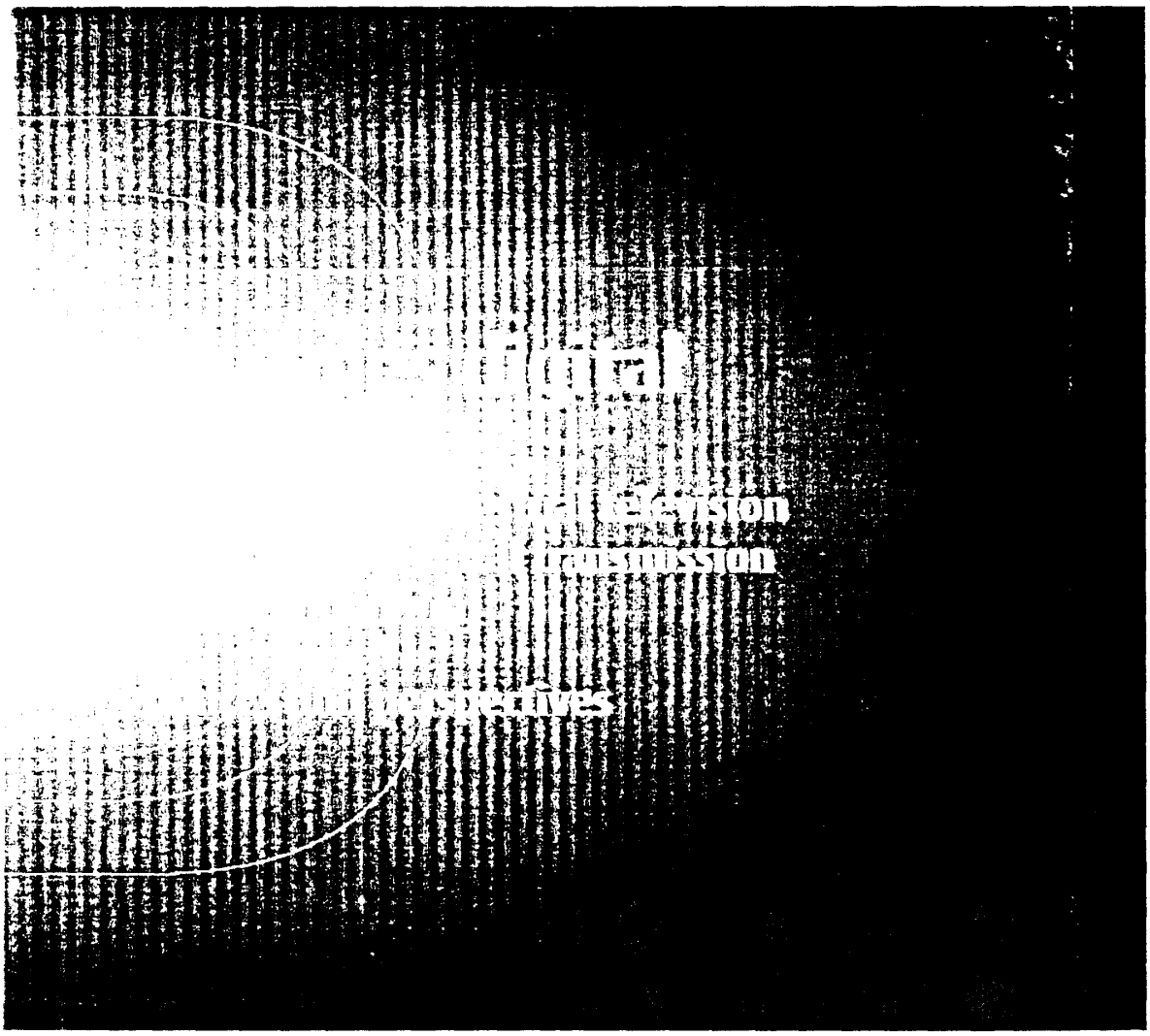
（二）改善數位電視產業環境

政府單位儘速修訂相關法規（廣電三法），並協助建構完整的數位電視基礎網路與推動數位電視創意內容發展等，同時訂定完備相關智慧財產權之保護、促進創意內容自由流通與競爭及建立使用者付費觀念等配套措施之規定，使數位電視能成為下一世代最具殺手級應用的數位家電產品。

（三）帶動數位視訊整合

業者服務機制的建立，應先求數位平台基礎網路之高品質及高涵蓋率，而節目內容則以播送 A/V 開始，在適當時機再加上互動、加值服務。如五家無線電視台已有合作共識，則進一步可推動共通營運平台促成節目互通及加強客戶服務之目標，並結合 DAB、網際網路與電信網路，朝數位多媒體方向發展。

附　件



Das Fernsehen

Berlin goes digital

The switchover of terrestrial television from analogue to digital transmission in Berlin-Brandenburg

Experiences and perspectives

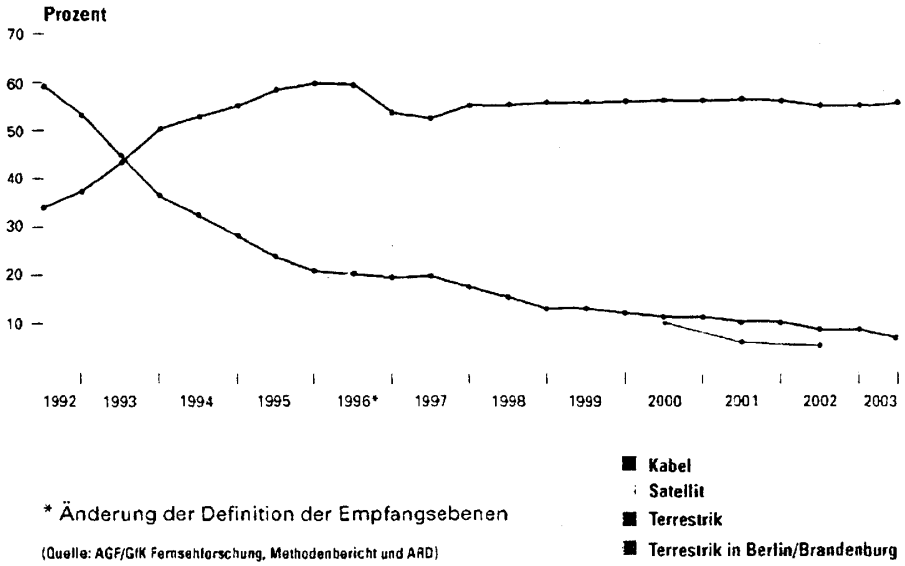
The switch-off of the last analogue terrestrial frequencies in Berlin-Potsdam on 4 August 2003 marks the completion of the world's first switchover from traditional terrestrial TV transmission to DTT.

The results of this process provide encouraging findings to continue along this route. The report below presents the switchover scenario, the experiences gained and the perspectives to be developed from it; a comprehensive documentation is under preparation.

1. The start-up scenario for the switchover

The decline of terrestrial reception

The number of homes receiving TV through the air has been going down continually in recent years. In national terms, the trend is as follows:

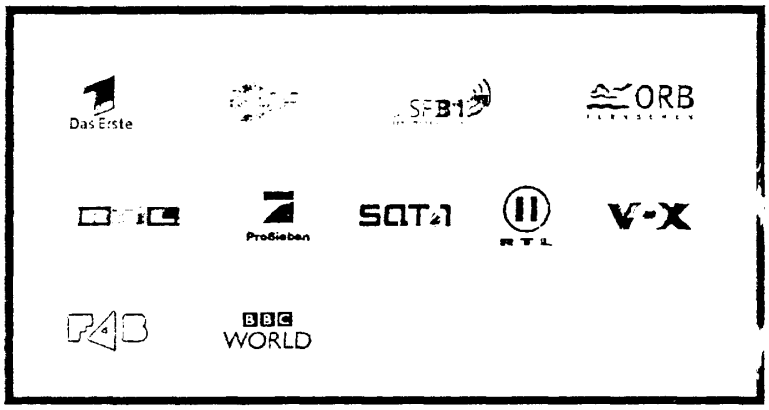


* Änderung der Definition der Empfangsebenen

(Quelle: AGF/GfK Fernsehforschung, Methodenbericht und ARD)

This decline could not even be slowed down by the above-average number of analogue services available in Berlin-Brandenburg where as many as 12 channels could be received terrestrially.

Analogue services prior to switchover



Analog bis November 2002

Before DTT roll-out, terrestrial reception was as follows:

- 160.000 homes with terrestrial reception only
- 90.000 homes with terrestrial reception for 2nd and 3rd sets
- of 1.8 millions television households in the area of reception overall.

The DTT pilot project and experiences with DTT all over the world

- DTT test operation since August 1997 in single-frequency networks in a joint pilot project of Deutsche Telekom, mabb and SFB.
- First frequency (channel 51, n-tv) switched from analogue to digital transmission.
- 16-QAM 2/3 modulation established as suitable transmission technology for achieving portable indoor reception.
- The failure of digital subscription (pay) television in the UK and Spain underline that switchover must be undertaken with free-to-air television.

The legal framework for the switchover

Under the Digital Broadcasting Initiative of the Federal government and the German states, transmission should be completely digital by the year 2010. Under the specifications of the Telecommunications Act (TKG), television frequencies must be operated exclusively in digital technology as of 2010.

The switchover is a prime objective of the European Union's e-Europe action plan. The states of Berlin and Brandenburg were the first regions in Germany taking an according initiative: an early amendment of the interstate media services treaty governing the cooperation of the states of Berlin and Brandenburg in the broadcasting sector and an according amendment of the Broadcasting Act for the public-sector broadcasting corporation (ORB) paved the way towards appropriate legislation for the switchover. At the initiative of the states, the Interstate Broadcasting Treaty governing broadcasting in all German states was also amended to permit all public-sector broadcasters to effect the technology changeover as well. Section 52 lit a) entities public-sector broadcasters to gradually discontinue analogue terrestrial transmission under certain conditions to allow for the build-up and allocation of digital terestrial transmission capacities in a phased process.

Under section 52 lit a) of the Interstate Broadcasting Treaty, television services so far using analogue transmission capacities must be given preference when the first digital terrestrial transmission capacities are allocated. The interstate media services treaty taken out between Berlin and Brandenburg in addition requires the cable network operators to continue re-transmission of services after switchover that had been awarded analogue capacities before.

Section 46 of the interstate media services treaty regulates the role and participation of the Berlin-Brandenburg regulatory authority, mabb, in the switchover process and entitles mabb to draw up special statutes governing the allocation of digital terrestrial frequencies. Under this statute, capacities permitting the transmission of broadcasting services, media services and other services may be decided upon and allocated jointly. The allocation can be effected under public law via a public contract. The mabb media council based its decision of 9 July 2001 on this provision.

In the Memorandum of Understanding agreed on 13 February 2002,

- the public-sector broadcasting corporations ARD, ZDF, RBB (successor to ORB and SFB as of May 2003),
- the private broadcasting services of the RTL group and the ProSiebenSAT.1 Media AG,
- and the mabb

laid down the key elements of the switchover.

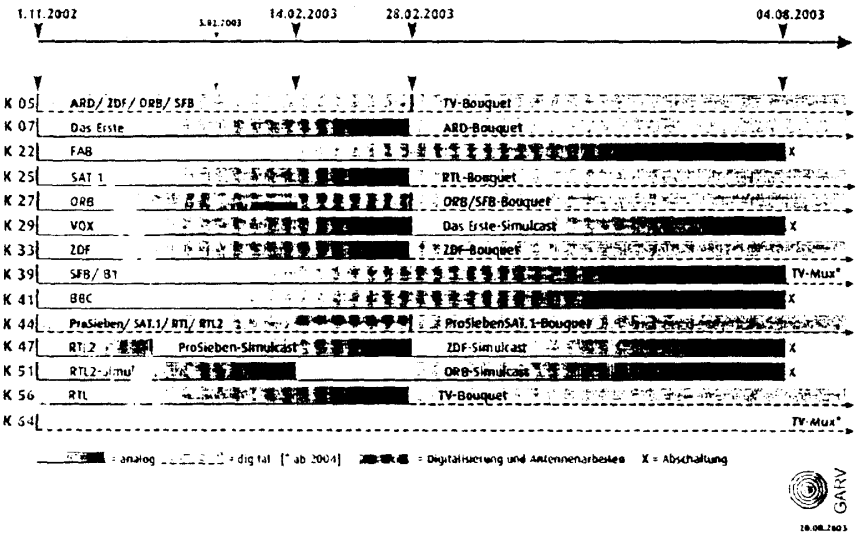
The concept for switchover

The switchover was scheduled to take three stages:

- During stage one, at least one high-power analogue channel was to be switched to digital transmission to demonstrate the quality of DTT and to provide some orientation for the households affected regarding new receivers to be purchased.
- In stage two, the high-power transmitters were to be switched to digital signals; analogue transmission of all national commercial broadcasters would stop, and the public-sector services would continue analogue transmission only via lower-power frequencies.
- In stage three, all analogue frequencies were to be switched off completely.

The following picture shows how the various frequencies were used during switchover:

Switchover from analogue to digital terrestrial transmission (switchover scenario)



Availability of receivers

To benefit from the switchover, consumers had to purchase a set-top box or an integrated TV receiver. Support from subscription (pay-TV) services or subsidies for the provision of low-cost set-top boxes were not expected to materialize.

The start of the switchover was therefore linked to the requirement for the receiver manufacturers and retail traders to offer basic receivers not exceeding € 200 in price at the start of the switchover. Several manufacturers met this prerequisitive by the start of the switchover process.

Furthermore, VHF reception (Band III) had to be ensured, the sets had to be more advanced compared to DTT receivers employed elsewhere.

2. The switchover in progress

Communication campaign

The communication campaign aimed at informing the homes affected by the switchover without yielding any negative effect on homes receiving television via cable or satellite. The homes affected had to be notified of the various stages of the switchover and their effects on television reception; they also had to be given objective details on the advantages of the various modes of transmission so as to help consumers with their decision on their future mode of television reception. Special information was required for DTT which was not available at the time at all.

Together with the television broadcasters, a communication concept was developed which was put into practice by the "Die Brandenburgs" agency.

The key media for communication was provided by the TV channels themselves: information spots and running bar information specifically devised for the campaign, were intensively broadcast during the various "hot" stages of the switchover, reaching all affected homes in Berlin and Brandenburg.

In addition, the broadcasters also reported on the switchover in their local news and current affairs programmes.

The most cost-intensive measure was a letter sent to every home in February 2003 which clarified once more that only homes which receive television via roof antenna are affected by the switchover.

For the information in the shop and for supplementary information, leaflets, brochures and newsletters were developed; no cost-intensive advertising or poster campaigns were run.

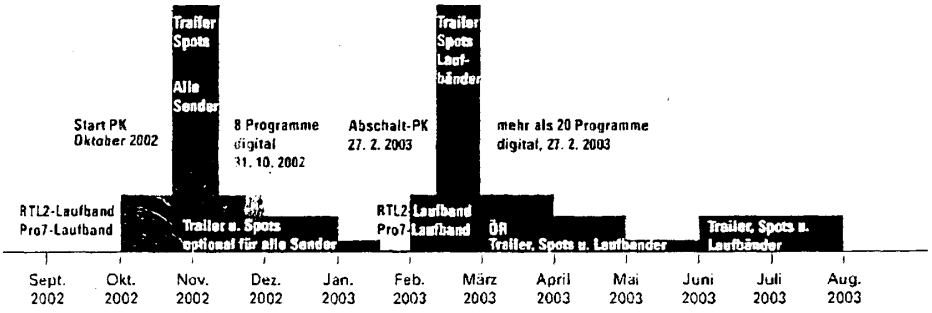
The parties to the switchover process also cooperated closely with the Berlin tenants' association and the local consumer associations. The product quality assessment board (Stiftung Warentest) tested receivers at an early stage and provided information on the developments.

During the switchover process, a joint telephone hotline was set up linking experts working for the broadcasters, the mabb and the GARV (the joint company of mabb, ORB and the Mecklenburg-Vorpommern regulatory authority promoting infrastructure). The hotline dealt with some 22.000 calls, and only 600 of the problems described could not be solved directly over the phone.

The campaign was supported via an internet website which had been designed in co-operation with Deutsche TV-Plattform (www.ueberallfernsehen.de).

The cost of the communication campaign were covered by the broadcasters and the mabb; they remained below the budgeted sum of €1.2 million.

The key components of the communication concept



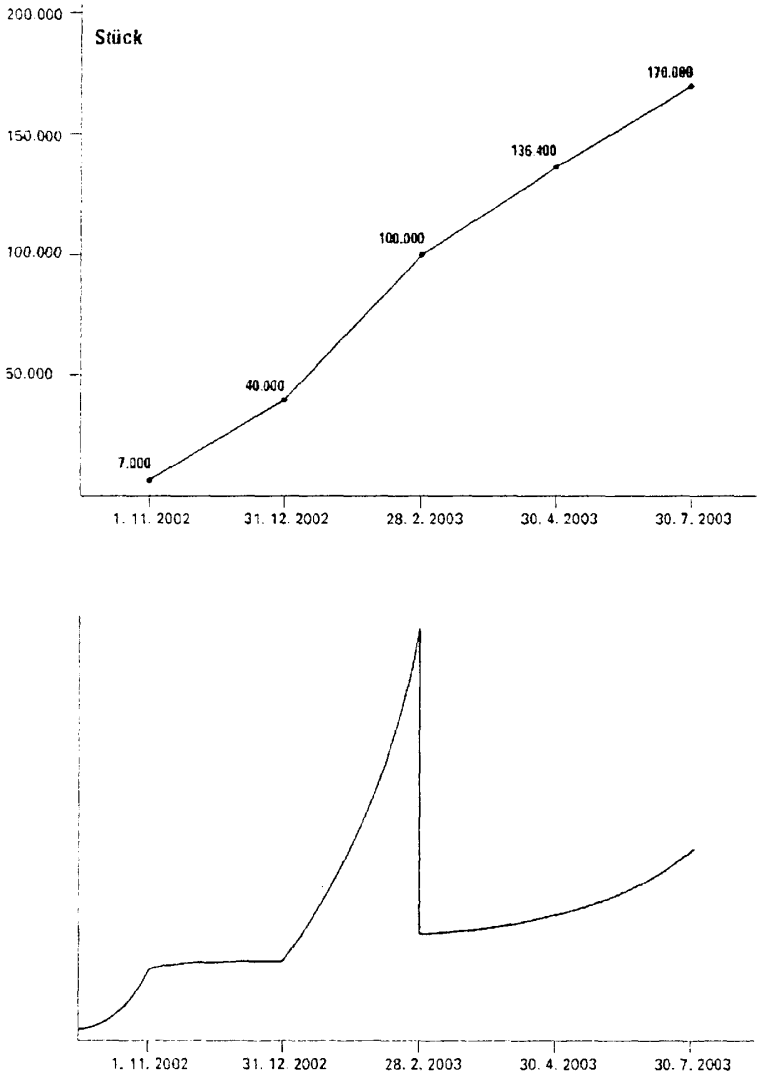
Receivers (set-top boxes)

The retail trade was informed about the switchover and its technical details in a series of information events conducted in spring 2002 by the Deutsche TV-Plattform (a cooperation of service providers, network operators, regulatory authorites and others) and the Berlin/Potsdam chamber of industry and commerce.

The range of set-top boxes offered in the shops exceeded expectations for this limited market.

The key factor for the development of sales was the main stage of the switchover in February 2003; thereafter, sales initially went down again but recovered subsequently.

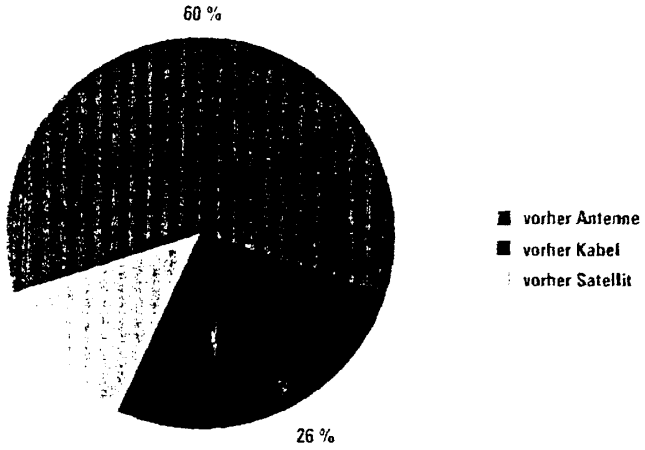
Development of sales figures



(Quelle: MABB)

The following picture provides a preliminary overview of homes purchasing set-top boxes.

Who bought a set-top box?



(Quelle: Emnid-Studie, Stand 30.04.2003)

The switchover in a socially acceptable manner

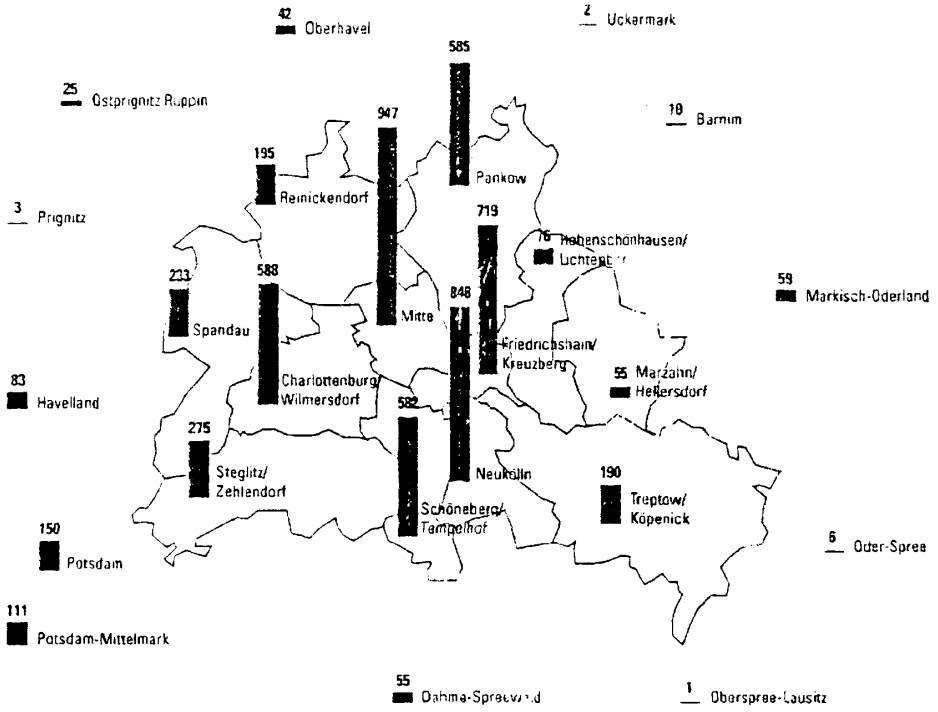
The parties involved in the switchover process were in agreement that a key issue to be resolved in the switchover process was how to make the switchover affordable also for homes with only a low income.

The receiver industry contributed towards this objective by providing sets for hire purchase, offering boxes at € 8.50 per month during the introduction phase to low-income homes. However, little use was made of this offer.

A special solution had to be found for homes entitled to a TV set under the German social security rules. Homes dependent on terrestrial reception were entitled to a set-top box. In an agreement with the social security services in Berlin and Brandenburg, mabb agreed to arrange for the low-cost provision of set-top boxes. The media council budgeted a maximum of € 1 million for this purpose on the provision that the social security services take over 25 per cent of the cost as their own share and also agree to take on assessment of who would be entitled to any support. Support was strictly limited to the switchover period and only covered homes that had previously received television via roof antenna only. The social security services also had to investigabe whether cable or satellite reception might not provide a more economical option in each case.

The provision and distribution of set-top boxes and the billing were organized via Rundfunkhilfe e.V., an institution set up by the association of free welfare organizations (Freie Wohlfahrtsverbaende). It organized some 6.000 sets.

The distribution of the boxes showed a notable demand in the western districts and in Berlin-Mitte while in the areas more remote from Berlin and the cities in the state of Brandenburg, demand was limited (distribution see graph).



(Quelle: MABB)

Planning and operation of the transmitter networks

mabb as the institution in charge of arranging technical transmission capacities for broadcasting in the states of Berlin and Brandenburg applied for the technical capacities required under the switchover agreement with the German Regulatory Authority for Telecommunications and Posts (RegTP).

RegTP conducted the procedure of frequency allocation under the Telecommunications Act (TKG) and initiated the necessary measures of coordination.

Close cooperation and agreement resulted in meeting the requirements of telecommunications legislation in good time prior to the respective stages of the switchover process. This had presented a specific challenge for the network operators who handed back licences for analogue transmission that had been allocated to them for an unlimited period, and had to face up to a completely new procedure.

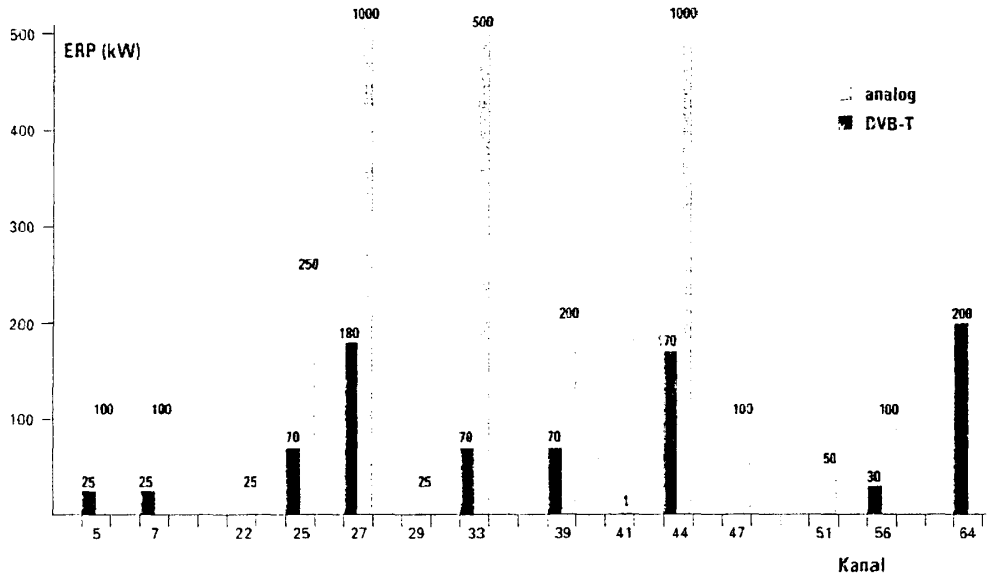
Deutsche Telekom AG (German Telekom) aligned the build-up of the transmission networks with its subsidiary T-Systems Media Broadcast and the future users at an early stage. By securing the necessary funding and the provision of the technical components early on, the network operators T-Systems and RBB (formerly SFB) could keep within the tight schedule.

GARV with its expertise contributed to developing solutions which met the interests of the broadcasters in the most economical manner. First of all, two transmitter stations were established in a single-frequency network. Further transmitter locations could improve reception, but this would require considerable additional expenditure.

International coordination was helped by the understanding which other European states showed for the switchover deliberations, especially neighbouring Poland.

Below, the performance of analogue frequencies prior to switchover is compared to frequency capacities after switchover.

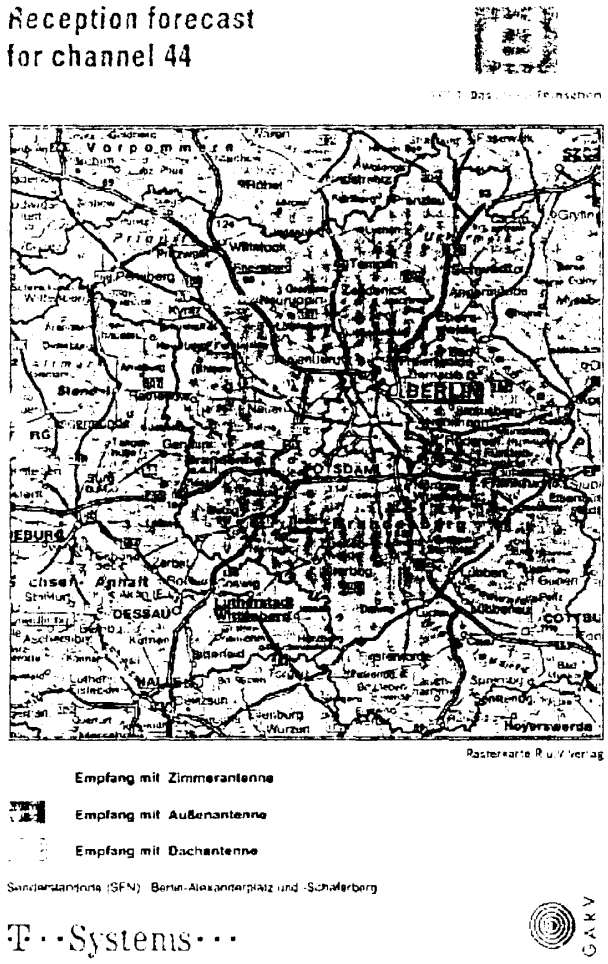
Frequenzy capacities



(Quelle: GARV)

Forecasts for the reception of digital services were largely confirmed by practical experience.

As an example, the forecast given for the reception of channel 44 shows that in practically all areas in the state of Brandenburg, DTT can be received via roof antenna; in the largest part of the city area, a room antenna is sufficient for DTT reception.



Switchover of cable networks, information of the housing industry

As cable network operators and operators of community antenna systems use a certain segment in the terrestrial transmission chain to feed the services into the cable networks or house distribution systems, some changes were also required in this delivery process. By switching to satellite reception and feeding digital terrestrial services into the networks following re-conversion to analogue transmission, continued supply was secured for the homes connected.

Even before the switchover commenced, the issue was investigated in detail under the guidance of GARV; the housing community and the cable network operators were informed about the measures to be taken at an early stage. For the first time, too, transposition of digital terrestrial signals in analogue cable networks was employed, and any resulting problems analysed and solved almost without exception.

Most cable operators and housing companies coped well with these challenges; the number and scope of problems during switchover could thus be limited to the absolute minimum.

Funding the switchover

The complexity of the switchover from analogue to digital transmission from a technical angle is matched by the complexity of funding the DTT roll-out: communication and information are among the prime tasks of the regulatory authority and its partners, i.e. the public-service broadcasting corporations funded through the licence fee, and the commercial broadcasters which are financed through advertising revenue. Solving the issue of social acceptability of the switchover is a public duty to be fulfilled by the state. The re-construction of the transmitter stations falls within the responsibility of the Regulatory Authority for Telecommunications and Posts which selects and licences the network operators in a tender process.

The licence fee revenue granted to the public-sector broadcasters also includes a certain share allocated to changes in transmission technologies: The calculation of the licence fee by the commission establishing the funds required by public-sector broadcasters for their operations (KEF) explicitly includes DTT. For the whole of Germany, the ARD network has an annual budget of € 18.4 million at its disposal while the funds for ZDF come to € 9.2 million per annum which are to be put towards the development of new infrastructures.

Unlike the public-sector broadcasters, the commercial broadcasters cannot bank on such funding options. For them, the switchover does not produce any additional income, but on the contrary might even result in a loss of audience shares. However, having the commercial services included in the overall DTT pacakge was essential for attracting consumers to spend money on a new receiver.

Under the Interstate Broadcasting Treaty, the regulatory authorities can grant support to measures serving technical infrastructure from their budgets which are derived from a fixed percentage of the licence fee revenue. The switchover actually became possible subsequently as the commercial broadcasters handed back the licences allocated to them for analogue transmission. In return, mabb lends support to the commercial broadcasters for a limited period.

In its support, mabb adopted the guideline that the commercial broadcasters in all cases bear those costs that would have accrued from the continued analogue operation.

The support granted for a channel varies from € 60.000 to € 70.000 per annum, depending on its technical design.

The two major commercial broadcasting groups, RTL and ProSiebenSAT.1 Media AG agreed to transmit their services for a minimum of five years via digital terrestrial technology, thus providing a reliable basis for consumers deciding on the purchase of a new receiver set.

mabb also supports the switchover of BBC World and of FAB, the local commercial TV broadcaster, who have both also handed back their analogue frequencies at comparable conditions.

Some other broadcasters who had not so far been allocated terrestrial frequencies are also granted support for reasons of equality.

Allocation of capacities

The Berlin-Brandenburg interstate media services treaty allows for the allocation of capacities via the DTT statute issued by mabb to accommodate the specificities of digital transmission and the process of switchover from analogue to digital.

The capacities to be allocated to the public-sector broadcasting corporations and the commercial television groups can be awarded under public law as complete multiplexes, provided a minimum of two multiplexes is available for other broadcasters and for new applications.

mabb put to tender the available capacities under a decision of its media council taken on 8 May 2002.

Experience to date has shown that there is no scarcity of capacities at present as many broadcasters who had previously not been allocated terrestrial capacities are currently not in a position to fund the additional cost incurred in digital terrestrial transmission.

Several applications were put on hold for the time being as they can only be realized in the next stages of DTT development.

The use of capacities by the subscription (pay-TV) service Premiere has not yet been decided. Another issue awaiting clarification is the question to what extent capacities will have to be provided for new applications and combinations of television services and other services. Several approaches to this effect incorporating mobile telephony providers have already been presented.

3. Experiences and findings gathered during the switchover process in Berlin-Brandenburg

The switchover took place at the right moment.

DTT roll-out could not have been effected any earlier as receiver prices would have had a adverse effect on acceptance. Nor should the switchover have come any later - even though the Digital Broadcasting Initiative envisages 2010 as the deadline for switchover.

The incentive for switchover decreases in direct proportion to the decline in the number of households receiving television through the air; the lower this proportion, the lower the interest of commercial television broadcasters in this mode of transmission. However, without the participation of commercial broadcasters, terrestrial transmission could only continue if public support were increased.

The acceptance of television broadcasters and consumers is the key prerequesitive for switchover.

In any switchover process, the various interests must be balanced and mediated against each other: An attractive range of services for consumers must include programmes of both the public-sector broadcasters and the commercial broadcasters.

Without the switch-off of analogue signals and fast switchover, DTT would have little chance of being accepted by consumers and broadcasters.

Only by switching off some high-power analogue frequencies could the spectrum necessary to bring home to consumers the two key benefits of DTT be made available. Benefits include a sufficiently attractive range of services and portable indoor reception without the need to resort to a CATV system.

For the broadcasters, switch-off was essential to avoid costs from doubling as a result of parallel analogue and digital transmission (simulcast); the commercial broadcasters would not have been in a position to meet such expenses.

The available funds would not have sufficed for a longer simulcast operation or increased support for the commercial broadcasters; spending money in this way would also have been counter to the principles guiding the economic deployment of funds.

As a key for switchover, funding of commercial broadcasters dependent on advertising revenue must be resolved.

For the consumers, DTT holds attractions as it does not incur any additional expenditure while for the commercial broadcasters, terrestrial transmission is an expensive mode of transmission as unlike in the case of cable reception, consumers do not contribute to the cost of service provision.

Additional revenue cannot be generated for the time being as DTT does not currently present an audience reach creating any interest within the advertising industry.

However, the commercial broadcasters should be interested in upholding the third mode of transmission as that way they can avoid becoming dependent on cable or satellite distribution alone, and can also develop new mobile and portable applications.

DTT is of special interest for the consumer and for the development of an broadcasting infrastructure which has some significance for the public at large. This is one of the reasons why public funds are put towards the realization of DTT.

Switchover is also justifiable as it contributes to an economic use of licence fee revenue.

For the terrestrial distribution of their services, the public-sector broadcasters spend a total of € 305 million per annum. However, the number of viewers reached through the air is continually going down. Unter the Interstate Broadcasting Treaty, public-sector broadcasters may switch to digital transmission, but they must not suddenly cease analogue transmission altogether. The transition from analogue to digital transmission will only work in conjunction with the commercial broadcasters following along the same route.

The world of analogue transmission was characterized by the separate development of the various infrastructures; as a consequence, no overall funding concept for digital transmission has as yet developed. Instead, the public-sector broadcasters follow their

own approach while the regulatory authorities support the funding of the infrastructures to be used by commercial broadcasters. Looking at infrastructure development as a whole, however, it would seem that re-allocating the money earmarked for analogue transmission until now could be sufficient to completely fund the digital infrastructure provided that the concept of overall terrestrial coverage everywhere and the strategy of closing gaps in terrestrial transmission in rural areas are given up; satellite transmission has long since made this approach obsolete.

For consumers, it is worth it to switch over.

Even though analogue services were switched off, the switchover resulted in less protest than had been anticipated.

The switchover quite deliberately did not base on parallel (simulcast) operation which would have meant that analogue transmission was only discontinued once 90 per cent of homes were supplied with digital terrestrial TV. As the experience proves, switch-off is accepted by a considerable number of viewers provided that adequate substitutes are available.

It was possible to convey that the idea the third mode of transmission can only be secured through modernization. Switch-off without anything to compensate for it would probably not have met with acceptance.

The added value of receiving more services for which the licence fee is paid which previously, however, were not available terrestrially due to the scarcity of transmission capacities (e.g., arte, 3Sat, Kinderkanal, Phoenix), as well as the improved quality of reception (independence from CATV systems, portable indoor reception) were sufficient to bring the benefits of DTT home to consumers. Numerous comments by viewers on these services as well as on those not available (e.g., BR 3) refute the claim that the viewers traditionally receiving television through the air would be content with fewer services - the opposite is the case.

Digital receivers were accepted despite the additional expenditure, and even though they currently still include some disadvantages compared to analogue reception (*additional cost for set-top boxes, one additional set each per TV set or video recorder*, switchover problems with the video programming system, VPS).

Consumers appear to accept that more services mean more expenditure, be it in the form of ongoing fees as is the case for cable reception, or in the form of the one-off expense incurred for a satellite dish or a set-top box for digital terrestrial reception.

The development of the receiver market

The receiver market is characterised by stationary receivers largely based on satellite receiver technology. Within a very short time, lively competition ensued, resulting in a clear drop of prices from which consumers benefit.

Switchover in Berlin was possible only because the synergies within the DTT range of products permitted low-cost stationary receivers to be put in the shops, and because Berlin could draw on the experience gained in other countries.

Prices in special sales promotions dropped to less than € 100 per set-top box. In the decisive period, retailers supported the introduction of DTT with large-scale advertising campaigns.

As is the case for the first introduction of any new technology, special difficulties were also expected for DTT: The equipment could only be tested after it had been brought into the market. A certificate "suitable for DTT" did not exist. The sensitivity of receivers or room aerials even under problematic conditions of reception could only be tested once the technology and the sets had been introduced; depending on the various types of receiver, reception varies in quality. The ease of operation also differs, as does the software employed, resulting in certain problems during switchover and the necessary re-adjustment of channels.

It proved impossible to arrange for joint communication measures of the receiver industry; experiences regarding consultation of the retail trade differed.

Considering that a large number of households affected by the switchover was not prepared to acquire the latest sets developed and had little experience in the use of digital equipment, the number of complaints and problems remained remarkably small.

For most consumers, the additional services available in good quality proved satisfactory, and the electronic programme guide (EPG) is accepted as a useful add-on. For additional interactive services it will be necessary to align the specifications of receivers to a greater degree.

Another issue awaiting solution is the downloading of new software through the air. This service is required as not every household has access to the internet or can download software via the world-wide web.

Reservations about digital television were allayed as a result of the experiences gained during analogue-digital switchover in Berlin-Brandenburg. Until then, digital television had been associated with subscription (pay) TV and the d-box in Germany and had been rated accordingly critically. From this change of assessment, the digitization of other modes of transmission could well benefit.

The fast switchover has opened up the entire frequency spectrum for digital services, for more television channels and for other applications.

Digitization provides an opportunity to the present users of frequencies to extend their range of services.

At the same time, access to terrestrial capacities is now open to other service providers who previously did not transmit their services terrestrially.

Apart from broadcasting services, other applications, and in particular interactive services can be developed.

Competition in this route of transmission is thus increased.

Competing infrastructures

Terrestrial transmission is gaining in attractiveness and thus presents an alternative to cable reception above all in densely-populated areas where satellite reception is frequently hampered.

Consumers welcome such an alternative so as to avoid becoming dependent solely on cable reception.

By comparison to terrestrial reception, cable offers certain advantages, especially the higher number of services available and the options for interactive applications.

Furthermore, even if not digitized, cable has the benefit of comfortable and easy use, a major factor especially for elderly viewers. However: This comfort presents an impediment for the development of new receiver technologies. Digital satellite reception and digital terrestrial reception will be the decisive factors for technology standards. Competition must be an incentive for cable operators to advance the benefits of cable even if the margins for price increases without increased performance have become smaller.

A more detailed range of products meets the demands of consumers: Many consumers accept fewer television services, and reception via second and third sets will rise.

Experiences gathered during the the communication campaign

It took considerable time and effort until a communication concept had been developed which was carried jointly by all television service providers and mabb, especially since there were plenty of varied ideas, but no previous experiences to draw on.

As a key starting point it was agreed that the communication campaign should not focus on promoting a new product, e.g. as a competitor to cable transmission, but should rather concentrate on informing the public about an impending change of technology affecting many homes. It appeared appropriate to replace the term "DTT" by "EverywhereTelevision". However, this term turned out to be slightly misleading as the concept also requires some activities by consumers in providing suitable conditions for reception.

What was atypical by comparison to other countries was that in Berlin-Brandenburg, there was no platform operator as is the case for cable networks or the ASTRA chain of satellites, or Digitenne which promoted the new mode of transmission in the Netherlands.

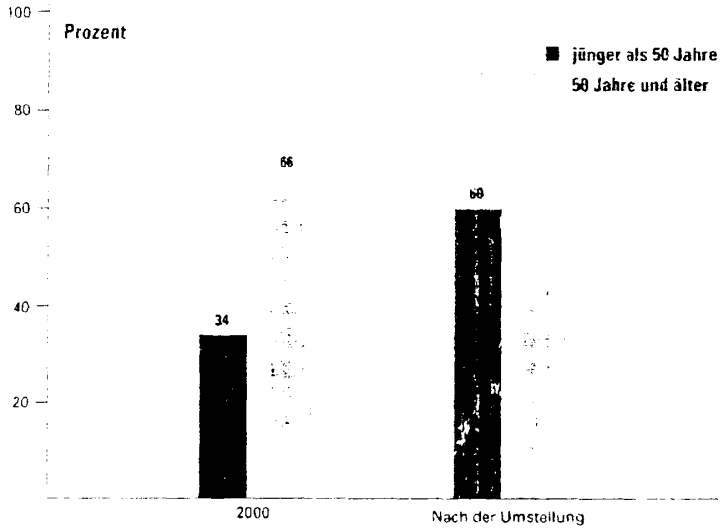
Experience to date on migration: terrestrial reception attracts younger audiences

Trends observed so far show that terrestrial reception attracts younger audiences and holds a strong position for second and third sets in the home. A large part of terrestrial households thus kept to terrestrial reception. Homes switching to cable reception included a large share of older audiences, partly because this proved more comfortable, but mostly because housing associations discontinued terrestrial reception.

On the other hand, however, good DTT reception is gaining in significance as an alternative for those consumers who are dissatisfied with the services available via cable. Price increases in this context can play a part in this as much as the service provided by the cable operators and the development of the range of services available via cable.

First results are shown in the following figure:

Terrestrical television now attracts younger audiences.



(Quelle: MABB/ARD)

More findings are expected from the research conducted by ARD and ZDF on the switchover.

It will, however, take another two to three years for a comprehensive picture to emerge on how attractive terrestrial reception can be for the consumer, especially since portable and mobile reception are only just getting off the ground.

Experiences gained with regulation and mediation

The flexible framework provided by the Berlin-Brandenburg interstate media services treaty and the DTT statute supported the switchover process. The regulation available for the analogue world would not have been sufficient as the service providers using analogue frequencies had to be offered incentives to switch from analogue to digital transmission. Agreements in the form of a contract proved particularly suitable to meet this requirement as they can accommodate all issues requiring regulation, both concerning the allocation of capacities and the support mechanisms as well as the schedules.

mabb proved to be well capable of mediating among the various interested parties as it is responsible for capacity allocation both to public-sector broadcasters and to commercial broadcasters and conducted intensive research of all aspects of digitization.

The fast decision-making processes proved to be of particular benefit in this context: the mabb media council had long decided on co-funding measures covering communication and social acceptability while the equivalent commissions of ARD and ZDF could not conclude their deliberations in good time.

4. Further perspectives

Switchover is only the start of a new development

During the switchover process, the prime objective was to get consumers to accept the switchover even in the light of some negative side-effects including the switch-off of analogue frequencies and some additional costs for new receivers.

This objective has been fully achieved as a result of the creation of an attractive alternative for stationary reception.

Without this basis, new applications and new target groups cannot be generated; the switch-off of analogue frequencies would not have been accepted without attractive substitute solutions.

Now the objective must be to promote the further advantages of DTT including portable and mobile applications in conjunction with the further development of digital reception technology.

For providing sufficient thrust in this, other city areas in Germany must follow the Berlin example.

Some details of the next stages of development: Development of stationary receivers and aerials

The increasing performance and the performance range of set-top boxes in the satellite sector will also present advantages for DTT; this includes hard disks for storage.

The sensitivity of reception of the receiver equipment can also be expected to improve. Regarding DTT this will relate above all to the development of aerials (rod antennae). Activities in this field have so far been limited as there are no synergies with the satellite sector.

Aerial technology will become even more important when mobile and portable reception increases.

Consideration should be given to certifying receivers prior to further switchover processes so that additional applications can be warranted to be available via all receivers.

Minimum standards concerning sensitivity of reception and ease of operation, e.g. for channel tuning, should help to reduce problems during switchover. Special consideration should be given to devise receiver equipment in a manner also suited for operation by persons with disabilities.

Promotion of interactive uses through the Multimedia Home Platform (MHP)

Because of the wide range of receivers on offer and the development of a purchase market, an open standard will be required to ensure that receivers are suited for interactive services. MHP presents such a standard.

The market for DTT, however, will only provide the necessary economic basis for new services in conjunction with the satellite market.

It would appear obvious, therefore, to introduce MHP together with a technology also permitting addressing and billing procedures.

Here, too, appropriate agreements relating both to the satellite market and the DTT market, would appear to be the best way forward.

Portable receivers

Portable sets with integrated receivers and aerials can bring across the key advantage of DTT, namely the reception of television via a portable set in different locations.

Price reductions as experienced with flat screens in combination with integrated receivers could already allow television to be watched in many locations where it has so far never been watched, e.g., the kitchen or the sailing boat.

In the medium term, measuring audiences watching TV on portable receivers will gain particular importance as the technology employed so far is linked to stationary receivers; portable reception will be of special relevance for commercial broadcasters.

Mobile applications - development of DTT-H

On the basis of DTT, new transmission processes can be developed which are particularly suited for reception on hand-held sets (PDA and mobile telephones). The smaller displays and new compression technologies permit larger video streams to be transmitted than has been the case for stationary reception so far.

The frequency spectrum which has become available as a result of the switchover to DTT permits such new applications to be tested and used in hybrid structures in conjunction with mobile communications networks.

The interconnection to mobile communications networks also offers the advantage of billing, thereby opening additional funding options for terrestrial routes of transmission.

Digital broadcasting transmission routes permit the transmission of audiovisual contents at low cost, especially contents attracting large audiences (e.g. live transmission of football matches). The share of the fee to be employed for funding contents is far higher than in the case of 3G applications which also incur high costs of transmission for broadband applications. This presents another incentive for the development of new contents for mobile transmission.

National perspectives for DTT

The acceptance with which the switchover in Berlin-Brandenburg has been met is a sound basis for continuing switchover efforts in other major city areas in Germany.

Frequency problems could thus also be resolved if city areas are addressed first regarding DTT switchover.

The switchover elsewhere could draw on the experiences gained regarding communications and social acceptability.

To agree on a national concept solving the entire range of issues concerning terrestrial transmission and its funding, however, would not appear to present a realistic option at present.

Switchover in major city areas in Germany will itself provide new incentives for the next steps and will enhance the development of the market especially by offering opportunities to consumers to determine the future developments via his or her choice.

The opportunity of a fast switch-off as proven during the DTT roll-out in Berlin-Brandenburg, is a precondition for funding the future digital terrestrial infrastructure. Parallel operation of analogue and digital television would result in similar problems as encountered with digital audio broadcasting (DAB).

Assessment of the experiences for other digitization processes

The experiences gained during the switchover in Berlin-Brandenburg may lend support to the identification and possibly even the solving of problems which might occur during other digitization processes.

While digitization of satellite transmission is making progress as it is driven by the market, digitization of cable networks is still hampered with major problems as is the digitization of audio broadcasting (DAB).

The switchover in Berlin and Brandenburg has shown that it can be worthwhile to venture off familiar paths. Media politics should take courage from the experience and should promote digitization in other regions as well.

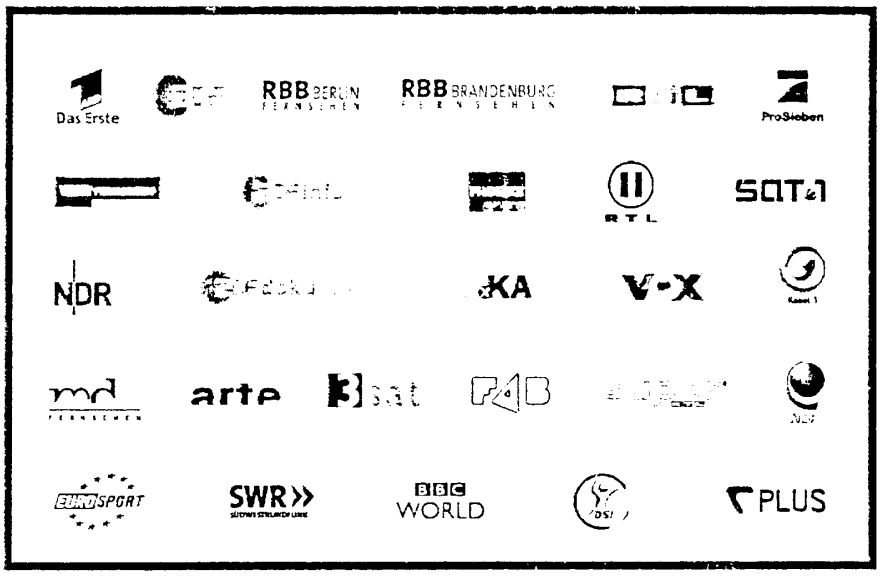
Now the next challenge has to be faced: the development of portable and mobile applications and their connection to mobile communications networks.

ANNEX

The key data at a glance

August 1997	DTT test operation starts.
November 1998	The interstate media services treaty is amended.
July 2001	The DTT statute is passed.
23 August 2001	mabb presents the introduction scenario for DTT in Berlin-Brandenburg during the Media Forum held in conjunction with the Internationale Funkausstellung 2001.
29 November 2001	The agreement with the television broadcasters on the switchover is initialled.
17 December 2001	The mabb media council decides to support the switch-over financially.
13 February 2002	The agreement between mabb, ARD, ORB, SFB, ZDF, ProSiebenSAT.1 Media AG and RTL Television on the switchover to digital terrestrial television transmission in Berlin-Potsdam is signed.
7 May 2002	The capacity requirements for the states of Berlin and Brandenburg are filed with the Regulatory Authority for Telecommunications and Posts (RegTP), coordination of capacities starts.
October 2002	RegTP allocates the frequencies required.
31 October 2002	Stage one of the switchover: Two high-power frequencies are switched from analogue to digital transmission.
28 February 2003	Analogue transmission of all national commercial television services ends; the high-power public-service frequencies (except for channel 39) are switched to digital operation; the public-services programmes are switched to lower-power analogue channels.
4 August 2003	Analogue transmission of terrestrial television in Berlin-Potsdam ends.

DTT services available at present



Digital seit August 2003

DIGITAL TELEVISION ACTION PLAN

Version 7.1

For Publication July 2003

CONTENTS

1. THE GOVERNMENT'S VISION

Digital television has already changed the way over ten million households think about TV. More choice and more opportunities from cable satellite and terrestrial TV are the reality for millions of people. We want every home to be able to enjoy the present and future benefits of digital television. The future is even brighter – today's cutting edge and pilot services already offer health advice, shopping, education, holidays, text messages, email, auctions, games and food delivered to your home. Interactive television can put control into the hands of viewers instead of broadcasters. Combined with a phone line, digital TV can open up access to the Internet through a familiar and trusted medium, broadening the opportunities for education, information, shopping and games.

The UK leads the world in digital television. Our broadcasters, manufacturers and retailers have put the UK at the forefront of this revolution. In just four years they have rolled out digital TV to around 44% of households -- a remarkable achievement. Millions of people have decided to change to digital to keep themselves better informed and take part in the changing world around them. Every day, more homes make the change. This has to be a willing decision. People do not want to be pushed, bullied or cajoled. Only a compelling offering will foster this - a key factor behind our decision on BBC new services and the requirement for the BBC to promote digital television.

The Government is committed to ensuring that terrestrial analogue broadcasting signals are maintained until:

- Everyone who can currently get the main public service broadcasting channels in analogue form (BBC 1 and 2, ITV, Channel 4/S4C and Channel 5) can receive them on digital systems;
- Switching to digital is an affordable option for the vast majority of people;
- As a target indicator of affordability, 95 % of consumers have access to digital equipment.

When we first announced these criteria in September 1999 we said that digital switchover could start to happen as early as 2006 and be completed by 2010. We remain convinced that this timing is realistic. But, as we said then, achieving this "depends very much on how the broadcasters, manufacturers and consumers behave". The Government can promote and support the take-up of digital television, but the market has to bear the lion's share of the work.

The technical and social scale of preparation for digital switchover should not be underestimated. Comprehensive and long term planning will be vital and the purpose of the Digital Television Action Plan is to set out a series of actions which need to be undertaken to ensure the switchover from analogue to digital television takes place; to identify who should lead on those issues and to set target dates for delivery.

In drawing up the list of tasks, we have placed consumers, their needs, legitimate expectations, and welfare, at the centre of the plan. This means that we will ensure that for consumers, digital television means: choice, quality, affordability and accessibility across a range of services, digital platforms and equipment.

Choice:
Of channels: Digital television can offer a wide range of high quality channels and services, some free-to-view, some subscription. It can also provide households with interactive services and the possibility of access to the Internet.
Of platforms: We want to ensure that, wherever possible, consumers can choose the means by which they will access their digital services.
Of equipment: As is the case now with the analogue televisions, people should have the choice of a very wide range of digital televisions sets, of all sizes and prices. They should also be able to choose from a range of set-top boxes, from the cheap and simple digital converter, to the top-end device with hard disk, Internet browser, etc... This equipment should also be as interoperable as far as is technically possible, to ensure that people who have bought equipment can still use it even if they swap to another service provider. We are committed to working with the manufacturers and within Europe to achieve this.

Quality:
Of services: Digital television offers better pictures and sound. It also allows for new enhanced and interactive services, offering a richer and more active viewing experience. But we must ensure that the new technologies deliver not just more channels, but more choice and diverse services, and we need to make sure that these services are of the highest possible quality and conform to basic standards of decency.

Affordability:
Of switching to digital television: Our aim is that switching to digital is an affordable option for the vast majority of people. As a target indicator of affordability, 95 % of consumers should have access to digital equipment. We need to ensure that those who are only interested in free-to-view television can access the digital services without having to bear an unaffordable cost.
Of converting multiple sets: We also need to ensure that cheap and simple digital receivers exist to convert the second or third sets within a household, as well as VCRs at an affordable cost.

Accessibility:
Of services: We are committed to ensuring that everyone who currently receives free-to-view analogue channels (BBC 1 and 2, Channel 3, Channel 4, S4C in Wales, and possibly Channel 5) will continue to receive the same channels free after switchover from analogue to digital television. We also want to ensure that everyone is included in, is able to learn from, and enjoys the wider benefits of the services and opportunities that digital television can provide.

2. THE ACTION PLAN'S OBJECTIVE & TIMETABLE

The objective of the Digital TV Action Plan Project is:

> "To ensure that the criteria set for switchover are met so that Ministers can, if they choose, take the decision to proceed to full switchover by ordering the switching off by 2010 of analogue terrestrial transmissions."

Thus the Project Plan is not designed to deliver switchover at this stage -- it is designed to deliver the pre-conditions for the government decision. A further major project, of implementation, would follow a decision to proceed. The Action Plan should

- enable Ministers to decide ***whether*** to proceed to switchover and, if so,
- enable Ministers to decide ***how and when*** to do so, with 2010 an option,
- and then help prepare for a ***successor project to do the job***.

The Project sits within the wider government vision of making the UK home to the most dynamic and competitive communications and media market in the world.

On timing, we now know that, given the practicalities on the transmission side, the switchover process itself will take about four years, with different regions switching in different years. Completion within the period 2006-2010 is feasible but, in order to achieve a 2010 completion target, a government decision to proceed with that target date would need to be made around the end of 2004, to allow for transmission contract negotiation, planning and transmitter procurement ahead of the four year switchover process.

We therefore need to complete the Action Plan work during the autumn of 2004.

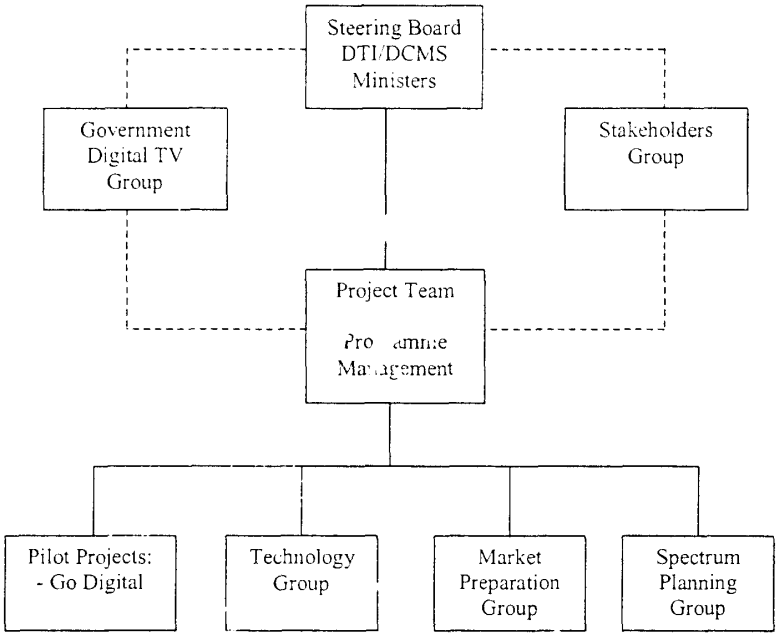
Showing how to make 2010 feasible does not, of course, mean prejudging Ministerial decisions about timing and about how timing relates to the ***accessibility*** and ***affordability*** criteria. Further discussion of the criteria, and in particular of how they apply to giving several years' advance notice of the target dates, will feature in a public consultation now planned for the spring of 2004.

The autumn 2004 final 'deliverable' from the Action Plan will take the form of a Business Case, with options, to be completed after this process of public consultation.

3. THE PROJECT STRUCTURE

The Digital Television Project structure is shown in Figure 1 below.

Figure 1: Project Structure



A brief description of each group's membership and role within the Project is given below. Terms of reference are given in the Appendix. **Note:** Other Government-led activities feed into the Project, including the work of the Broadband Stakeholders Group, the Office of the e-envoy, and the Cabinet Office Spectrum Strategy Committee.

Steering Board

The Steering Board is responsible for the strategic delivery of the Action Plan to meet the needs of both Government and industry. It is chaired by Ministers and includes the joint chairs of the Government Digital Television Group, the joint project directors, the chairman of the Stakeholders Group and other stakeholder representatives, and the Project Manager. The Steering Board provides the direction to the Project Manager, who is responsible for the day-to-day delivery of the plan through the project teams.

Government Digital Television Group

The Government Digital Television Group brings together those Government Departments who are responsible for developing and delivering policies for digital television and ensures that recommendations to Ministers are co-ordinated. In particular, where different Departments lead on making recommendations, the Group provides a forum for considering,

how those recommendations impact on the delivery of the Digital Television Action Plan. The Group gives guidance to the Project Team, which is responsible on a day-to-day basis for delivery of the Action Plan.

The Government Digital Television Group is chaired jointly by DTI and DCMS, the Departments charged jointly by the Prime Minister with achieving digital switchover. Those Government Departments and Offices with a direct involvement in the development of relevant policy will be members, including the Office of the E-envoy, HM Treasury, the No 10 Policy Unit and the Radiocommunications Agency. The relevant independent regulators – ITC and OFTEL- are also members. The Government Digital Television Group meets once a month.

Stakeholders' Group

This Group enables a wide range of organisations to contribute to the process of developing and implementing the Action Plan. The Group's key role is to provide high-level advice, and a cross-sector perspective on the work produced by the Task Groups.

The Stakeholders' Group draws its membership from organisations with a valid interest in the development of digital television in the UK, these include: consumer groups, broadcasters, manufacturers, retailers, content providers and transmission network operators. Barry Cox was selected as the Chairman and Sheila Cassells as the Deputy Chair by the members of the first meeting in January 2002 and reaffirmed in January 2003. Main meetings are quarterly, with sector-specific meetings in between.

Project Team

The Project Team is responsible for preparing and monitoring the Project work-plan, for directing the work of the working groups, and for supporting the activities of the Government and Stakeholder groups. The group is made up of officials from the DTI and DCMS as well as secondees. It works together on a day-to-day basis, and meets regularly to monitor progress.

Spectrum Planning Group

The Spectrum Planning Group is developing a range of planning options and outline assignment plans. It also provides technical support and analysis to the Government Digital Television Group and Stakeholders Group in matters concerning spectrum policy.

The Spectrum Planning Group is chaired by the ITC and draws its membership from those organisations who are responsible for television spectrum planning and co-ordination in the UK. This includes representatives from the BBC, Radiocommunications Agency, DCMS and DTI. It works closely with the Joint Planning Project to improve the reach of the current DTT network.

This Group is supported by a new Spectrum Stakeholders Group which has been established within the framework of the Action Plan. This includes representatives from a wide range of interested parties, including broadcasters, other potential users of the spectrum, and consumers.

Market Preparation Group

The Market Preparation Group develops and co-ordinates a strategy to manage the process of raising the awareness and knowledge of digital television in both the industry and public. The Group also commissions research on consumer attitudes where required. The Market Preparation Group draws its membership from organisations representing broadcasters, manufacturers, and consumer groups.

Technology and Equipment Group

The Technology & Equipment Group is responsible for providing advice and analysis of technical issues to both the Government Digital Television Group and Stakeholder Group. It also co-ordinates, where necessary, agreement on key technical issues affecting switchover. The Technology Group draws its membership from organisations representing broadcasters, manufacturers and network operators. In carrying out these tasks it seeks to work closely with other industry groups such as the Digital Television Group.

Pilot projects

The Go Digital project, led by the ITC, which researched the implications of fully converting households to digital by simulating conversion for some 250-300 homes in the Tamworth-Lichfield area is now complete. A 'DTT analogue conversion' pilot is being planned for 2004. A pilot for a 'Digital satellite-only area' is also envisaged.

4. QUICK GUIDE TO TASKS BY QUARTER

	Q3 2003	Q4 2003	Q1 2004	Q2 2004	Q3 2004
Government / Regulatory					
Framework (2.17)	Check any other legislation or regulation required?	COMMS Act defines OFCOM role			
Consumer Research (2.1, 2.3, 2.9, 4.9)	Monitor take up. Also Scientific Generics advice	Monitor take-up	OFCOM & BBC report on take-up and criteria		Assessment against criteria (revised?)
Consumer Consultation (2.2, 2.3)	Set up Consumer Experts Group	Work with Consumer Experts Group	Prepare consultation documentation	***Public consultation, including possible revision/additions to criteria***	Digest consultation Results
Non-domestic TVs (2.7)	Identify public sector procurement & financial planning organisations	Update contacts & review info needs	Complete review of non-domestic TVs		
Spectrum Planning (2.11, 2.12, 2.15)	Report back on World Radio Conference	Working hypothesis on analogue networks to be converted	Agree PSB proposals on D-SAT/DTT mix for universal coverage		Finalise frequency plan and transition plan for possible govt. announcement
Spectrum Planning Group					
D-Sat only areas (3.6)	Maps and lists for D-Sat only area options between 1% and 6%	PSB proposals on D-Sat /DTT mix for universal coverage			
DTT Coverage (3.12, 3.13)	First draft of outline frequency plan	Check against analogue coverage	Complete key elements of frequency plan prior to consultation		Post code database for consumers to see options post-switchover
DTT Technical Standards (5.9.3c, 3.14 & new 3.15)	Commission research on set top aerials, power and mode	Implications of research results for post switchover mode?	Any PSB/TDN proposals to rearrange muxes for conversions or change mode?		
Transition Planning (3.11)	Clarify transition process for (a) sites with DTT today (b) sites due to get DTT at switchover	Clarify order options for TX sites and regions	TDN views on optimal order for TX sites and regions?		

	Q3 2003	Q4 2003	Q1 2004	Q2 2004	Q3 2004
Market Preparation Group					
Briefings and Information (4.3, 4.4, 4.8, & new 4.10)	Set up professionally-supported communications strategy group, with MPG plan	Stakeholder briefings prior to consultation	Info for landlords, non-domestic TV organisations etc	Ongoing	
Publicity and Promotion (4.3, 4.4)	Press coverage for any autumn government statement	Finalise and cost full MARCOM strategy	Pre-consultation press coverage	Ongoing	
Training (4.6)	Start to prepare retailer briefings and training kits	Finalise aerial installers' training	Ongoing implementation of training		
Labelling aerials & receivers (2.6, 4.7)	Commission logo design and set up admin and processes for its use	Implement in a trial area and learn lessons	Ongoing implementation and promotion		
Technical & Equipment Group					
DTT Receivers (5.13)	Clarify DTT testing and interoperability regime	Implement Ongoing			
DTT Aerials (5.14)	Audit aerial benchmarking regime	Augment aerial benchmarking scheme	Ongoing implementation		
Consumer Equipment Proposition including Recording (5.19 & new 5.25)	Plan demonstration of costed consumer equipment propositions for converting range of household types, for a date in Q4	Implement advance programme information for recording via EPG – for PVRs etc			
Usability / Special Needs (2.9, 5.16, 5.18, 5.22, 5.23)	Clarify implementation strategy for receiver Usability recommendations	Decide solution to audio description and how to achieve implementation			
Environmental Issues (5.8, 5.17)	Summarise energy best practice	Clarify waste disposal best practice			
Pilots					
DTT pilot (6.5)	Set up DTT pilot project and plan	Sign off plan and pilot funding	TX planning work and soft test consumer equipment	Implement Ongoing	
D-Sat pilot (6.6)			Initial planning		

	Q3 2003	Q4 2003	Q1 2004	Q2 2004	Q3 2004
Project Management					
Public expenditure (7.10)	Continue cost-benefit analysis work and, drawing on Scientific Generics work, review any special needs	Pull together all public expenditure, including MARCOM, special needs, project organisation & procurement	Secure Treasury support within business case		
Receiver volumes & prices (new 7.11)	Discuss feasible shape of consumer equipment take-up graph with Intellect. Start to model receiver volumes & prices	Investigate possible industry discount scheme for MoU			
Successor project organisation (new 7.12)	Assess options for successor organisation	Working hypothesis for Memorandum of Understanding			
Memorandum of Understanding (new 7.13)		Draft Memorandum of Understanding	Government, broadcasters' & manufacturers' commitment in principle to MoU		
Business case including risk management (7.10)	First draft business case	Risk management workshop	Update business case	Incorporate Treasury views and MoU commitments in business case	***Finalise Business Case for presentation to Ministers***

5. FULL LIST OF TASKS FOR REFERENCE

Italics in the STATUS column denotes completed task

SECTION 1: STAKEHOLDERS

	TASK	ACTION	TIMING	STATUS
1.1.	**PUBLISH ACTION PLAN** Develop draft action plan and publish	Publish Plan	Q4 2001	***Action Plan published December 2001 and agreed by Stakeholders January 2002. Revised quarterly but, with this proviso, complete.***

SECTION 2: GOVERNMENT POLICY

Primary ownership of this set of tasks belongs normally with the DCMS and the DTI, unless otherwise indicated.

	TASK	ACTION	TIMING	STATUS
2.1 2.1.1 2.1.2 2.1.3 2.1.4	**ITC/BBC SWITCHOVER REPORT** Request ITC and BBC to produce a review of digital television take-up and availability within the UK as required under Section 33 of the 1996 Broadcasting Act.	2.1.1 Request report 2.1.2 Receive report 2.1.3 Receive updated report 2.1.4 BBC & OFCOM further report	Q4 2001 Q4 2002 Q2 2003 Q1 2004	Requested Dec 2001 Received. Further information on take-up requested. Received
2.2 2.2.1 2.2.2 2.2.3	**DCMS SECRETARY OF STATE TO CONSULT** DCMS Secretary of State to consult with representatives of viewers etc as required by Section 33 (BA 1996)	2.2.1 Issue consultation materials 2.2.2 Set up Consumer Experts Group 2.2.3 Public consultation	Q4 2001 Q3 2003 Q2 2004	Consultation material from the Viewers' Panel published on 14th February 2002.

	TASK	ACTION	TIMING	STATUS
2.3 2.3.1 2.3.2	**PROGRESS AGAINST SEPTEMBER 1999 KEY CRITERIA** Conduct a comprehensive review of progress towards digital switchover, with particular reference to the Accessibility, Availability and Affordability tests announced in September 1999. As part of this process consider recommendations of Viewers Panel, which reported in November 2001. Revise to reflect BBC and ITC review reports prepared under item 2.1, and the results of the statutory consultation required under item 2.2.	2.3.1 First report 2.3.2 Review	Q1 2002 Q2 2003	Decision to set up Consumer Experts' Group in 2003 and hold public consultation in spring 2004
2.4 2.4.1 2.4.2	**COST-BENEFIT ANALYSIS** Carry out an overarching cost-benefit analysis of the options and timing for achieving digital switchover. This will assess the costs and benefits of taking measures to enable the switching off of analogue terrestrial transmissions to commence from specific dates on or after 1 January 2006.	2.4.1 Set terms of reference 2.4.2 Report completion of model	Q1 2002 Q1 2003	***Complete, terms of reference published on the website.*** ***Model completed, though analysis and updating of data to continue***
2.5 2.5.1 2.5.2 2.5.3	**REVIEW IMPACT OF GOVERNMENT PLANNING REGULATIONS** Review impact of planning regulations for aerial/dish deployment Office of the Deputy Prime Minister responsibility	2.5.1 Initiate 2.5.2 Consultation 2.5.3 Follow-up action	Q2 2002 Q1 2003 Q3 2003	Industry meeting held in July 2002 Consultation document for England in preparation Published April 2003 Post- Consultation in England Process for Scotland, Wales & NI ?

TECHNICAL POLICY DEVELOPMENT

	TASK	ACTION	TIMING	STATUS
2.6 2.6.1 2.6.2 2.6.3	**SALES OF INTEGRATED DIGITAL TELEVISION SETS IN THE UK AND EU** Comprehensively investigate with industry and European Commission issues surrounding the transition to exclusive sales of integrated digital TVs.	2.6.1 Report 2.6.2 Consultation 2.6.3 Implement labelling scheme with industry	Q1 2002 Q3 2002 Q3 2003	CONDOC published in June 2002. Delayed from Q2 2003

	TASK	ACTION	TIMING	STATUS
2.7 2.7.1 2.7.2	**ISSUES RELATING TO NON-DOMESTIC TVs** Provide guidance setting out benefits of digital television and means of accessing it. Identify specific issues which relate to TV used for education (schools, libraries), health (hospitals), prisons etc. Extensive liaison required with other government departments including DfES/DTI/Cabinet Office/Home Office/DoH	Report Complete review	Q4 2002 Q1 2004	Paper prepared in October 2002: follow-up with range of public sector bodies Nb. Role of government procurement?
2.8	**REVIEW STANDARDS ISSUES/LEGACY/MIGRATION** Resolve standards issues: consider how to minimise market entry barriers (e.g. through open common standards for programme exchange), and consider the proposed MHP standard	Ongoing Initial proposal	Q2 2002	***Complete - Report issued to TEG showing how MHP and MHEG can co-exist***
2.9 2.9.1 2.9.2 2.9.3 2.9.4	**ADDRESS HUMAN FACTORS ISSUES INCLUDING ACCESS FOR DISABLED PEOPLE** Scope full range of human factors issues Taking account of the analysis of the equipment needs of disabled people (see action 5.2), identify how appropriate provision of appropriate services for people with disabilities could be made. Identify ways of minimising re-authoring and other constraints	2.9.1 Report 2.9.2 Report on inclusive design 2.9.3 Report on Elements of change 2.9.4 Report on Making the transition	Q1 2002 Q3 2003 Q3 2003 Q1 2004	Scoping study by CRSP, Loughborough University, Q1 2002 Scientific Generics commission

SPECTRUM POLICY DEVELOPMENT

	TASK	ACTION	TIMING	STATUS
2.10 2.10.1 2.10.2 2.10.3	**DEFINE POST SWITCHOVER SPECTRUM ALLOCATION** Determine which UHF frequency channels should be retained for terrestrial television broadcast use post-switchover, and give clear guidance to industry.	2.10.1 Consultation 2.10.2 Interim Statement 2.10.3 Working Hypothesis	Q4 2001 Q2 2002 Q4 2002	***Consultation published on website*** ***Interim statement May 2002*** ***Complete Ministerial Statement made in January 2003, deciding spectrum planning work to be based on analogue conversions***

	TASK	ACTION	TIMING	STATUS
2.11 2.11.1 2.11.2 2.11.3	**DEFINE TARGET FOR DTT PSB POST SWITCHOVER** Determine and agree a target level of UK coverage for digital terrestrial public services post-switchover. Consider whether separate levels of coverage should be set for separate parts of the UK.	2.11.1 Consultation 2.11.2 Further dialogue 2.11.3 Agreement based on broadcaster proposals	Q4 2001 Q2 2002 Q1 2004	Consultation published on website Delayed from Q3 2003. Broadcaster proposals now expected by end of 2003
2.12	**INTERNATIONAL NEGOTIATIONS** Prepare UK negotiating brief for World Radio Conference (2003) and international conferences (in 2004 and 2005) on spectrum allocations for sharing the DTT spectrum with other countries. Radiocommunications Agency responsibility	Negotiating Brief Update spectrum plan	Q4 2002 2003 2005	
2.13	**RESPOND TO CAVE REVIEW** Respond to the Cave Review of Radio Spectrum Management (reported Q1 2002)	Ongoing Initial response	Q2 2002	***Response published October 15th, 2002.***
2.14	**IDENTIFY ADDITIONAL SERVICES TO USE ALLOCATED INTERLEAVED CAPACITY** Within the spectrum plan it is possible that additional interleaved capacity can be used for a range of additional broadcasting and other services. If this is the case, need to agree when and how to license such services	Brief Stakeholders	Q2 2003	Initial briefing April 2003
2.15 2.15.1 2.15.2	**AGREE TECHNICAL SWITCHOVER STRATEGY** Based upon recommendations produced in 3.10, 3.11 and 3.12 agree technical transition policy	2.15.1 Options 2.15.2 Follow-up	Q2 2002 Q1 2004	Outline scenarios for consideration agreed Reach as much agreement as can be finalised at this stage
2.16	**MONITOR CONVERGENCE DEVELOPMENTS** Ensure that the Plan takes account of continuing work on "future scenarios", including consequences for spectrum management and allocations	Ongoing Report	Q2 2002	***Report issued to the project team. Complete but to be kept under review***
2.17	**IDENTIFY ANY CHANGES TO SPECTRUM MANAGEMENT REGIME** Make any changes to spectrum management policy and regime pertinent to terrestrial TV Spectrum	Report	Q3 2002	***Complete, included in Comms Bill***

	TASK	ACTION	TIMING	STATUS
2.18	**STREAMLINE SPECTRUM PLANNING REGIME** Working with the ITC, BBC and RcA implement changes to spectrum planning regime to streamline planning and approvals process.	Report	Q1 2002	*Complete*

REGULATORY POLICY DEVELOPMENT

	TASK	ACTION	TIMING	STATUS
2.19 2.19.1 2.19.2	**PUBLISH INTERACTIVE TELEVISION POLICY** Produce framework document on interactive digital television outlining the vision and its role in delivering e-Government services and enabling Internet and Web access.	2.19.1 Consultation document 2.19.2 Follow up	Q1 2002 Q3 2003	Consultation document published October, 2002 Post-consultation action?
2.20	**CO-ORDINATE GOVERNMENT POLICIES ON DELIVERY AND USE OF ELECTRONIC SERVICES** Clarify, and as necessary harmonise, relationships between switchover policy and other contingent Government policies and activities such as access to the Internet.	Ongoing 1st report	Q2 2002	***DTI to lead the development of interactive TV policies in conjunction with the e-envoy Follow up paper for Project Team November 2002 and government Digital TV group February 2003*** ***Complete***
2.21	**MONITOR REGULATORY FRAMEWORK** Ensure there is an appropriate statutory and regulatory framework for digital TV and switchover at both national and EU level	Ongoing 1st report	Q2 2002	Included in the Comms Bill EU Paper due 2003
2.22 2.22.1 2.22.2	**CONSIDER FURTHER PROPOSAL FOR BBC NEW SERVICE** The BBC have resubmitted their plans for BBC3 Decision on Proposal for BBC by SoS.	2.22.1 Consultation ends 2.22.2 Decision	Q1 2002 Q2 2002	 ***BBC Three approved by SoS in September 2002***
2.23	**ASSESS FUTURE OUTLOOK FOR DELIVERY OF SERVICES** Explore potential of other means e.g. xDSL to contribute to switchover as potential fourth platform as take up increases. Review xDSL take up. Ensure co-ordinated with broadband strategy.	Ongoing Initial Report	Q4 2002	***Covered by November 2002 Project Team paper under 2.20 above***

POLICY ISSUES IDENTIFIED BY TEC

	TASK	ACTION	TIMING	STATUS
2.24	**STUDY OF SECURITY AND ALERT SYSTEMS**	Report	Q3 2003	

	TASK	ACTION	TIMING	STATUS
2.25 2.25.1 2.25.2	**RECEPTION IN MULTI-OCCUPANCY LEASEHOLD AND RENTED PROPERTY**	2.25.1 Assessment of legal implications: initial report 2.25.2 Follow up	Q1 2003 Q3 2003	Initial report completed
2.26	**STUDY BERLIN SWITCHOVER AND OTHER INTERNATIONAL DEVELOPMENTS**	Initial Report Final Berlin report - others ongoing	Q1 2003 Q4 2003	Initial report completed
2.27	**DEVELOP SCENARIOS FOR USE WITH COST-BENEFIT ANALYSIS**	Project team work	Q1 2003	***Complete***
2.28	**STUDY OF THE SATELLITE MARKET IN A WIDER CONTEXT, INCLUDING BROADBAND**	Sizing & scoping of satellite market and implications of satellite only option	Q2 2003	***Complete***

SECTION 3: SPECTRUM PLANNING GROUP

SPECTRUM POLICY ANALYSIS

	TASK	ACTION	TIMING	STATUS
3.1	**PRE-SWITCHOVER DTT COVERAGE** Quantify the precise limit to DTT coverage whilst simulcasting with current analogue services continues. An update is also to be produced which quantifies coverage using the new UK planning model (UKPM)	Report Updated report	Q1 2002 Q2 2003	***Completed March 2002*** ***No longer required***
3.2	**ANALYSE DTT COVERAGE IN CONTEXT OF REUSING EXISTING AERIALS/DOMESTIC EQUIPMENT** Assess DTT coverage taking into account the effectiveness of existing domestic aerial installations including the use of set top aerials, digital equipment, in home analogue spectrum use and the use of MATV systems. Update coverage predictions using UKPM	Report Updated report	Q2 2002 Q2 2003	***Report completed Q3 2002. Was delayed as resources were diverted to the ITC retendering exercise*** ***No longer required***

	TASK	ACTION	TIMING	STATUS
3.3	**ASSESS COSTS OF ALTERNATIVE SPECTRUM ALLOCATIONS FOR DTT** Quantify the costs of implementing transmission/ switchover for broadcasters, transmission networks and viewers under different scenarios of spectrum usage.	Report	Q2 2002	***Report completed October 2002. Was delayed as resources were diverted to the ITC retendering exercise***
3.4 3.4.1 3.4.2	**REVIEW DTT PLANNING CRITERIA** Review and update as required the methodology and parameters used for DTT planning and coverage prediction with special focus on comparison with current analogue coverage and portable reception.	3.4.1 Report 3.4.2 Implement	Q2 2002 Q2 2003	New planning model developed, to be implemented in the autumn following verification Due to be implemented in autumn 2002, following verification. Delayed to 2003
3.5	**IDENTIFY ADDITIONAL CAPACITY FOR INTERLEAVED UHF SERVICES** Identify how any usable post switchover spectrum (taking into account consultation in 2.10) in the UHF frequencies could be used to carry additional DTT and other services including mobile DTT.	Report	Q2 2002	***Report completed Q3 2002. Was delayed as resources were diverted to the ITC retendering exercise***
3.6	**DEFINE HOW PSB WILL BE DELIVERED TO ALL UK HOMES** Determine and quantify how to ensure the reception of appropriate PSB services for all UK homes that can currently receive analogue PSB services.	Report	Q4 2002	***Report completed December 2002***

DETAILED SPECTRUM PLANNING

	TASK	ACTION	TIMING	STATUS
3.7 3.7.1 3.7.2 3.7.3	**EXTEND DTT GEOGRAPHICAL COVERAGE** Extend coverage so that at least 72% of households can view all 6 multiplexes. Extend coverage of the two public service broadcast multiplexes from 80% to 84%	3.7.1 Produce Plan 3.7.2 Implement 3.7.3	Q1 2002 Q2 2002 Q3 2003	Coverage increases achieved by actions of multiplex licencees, close to original targets (PSB 82%). Review again Q3 2003 Review if appropriate
3.8 3.8.1 3.8.2	**IMPROVE QUALITYAND RELIABILITY OF DTT COVERAGE** Following success of early power increase trials, work with the Joint Planning Project and the current DTT broadcasters to implement network improvements to sustain higher digital terrestrial TV power levels to improve DTT coverage and to increase consumer access to DTT services. Extend higher transmission powers nationwide, subject to international constraints	3.8.1 Assess results of trial 3.8.2 Final plan	Q4 2001 Q2 2002	***3dB trial successful – agreement to use higher power transmissions in all future network planning*** ***Technical planning complete.***

	TASK	ACTION	TIMING	STATUS
3.9 3.9.1 3.9.2	**ASSESS LIMITS OF DIGITAL INTERFERENCE TO ANALOGUE SERVICES** Working with the Joint Planning Project and the DTT broadcasters carry out high power DTT trial to assess the reasonable limit of DTT interference to analogue services. Make recommendations on how to implement the results of trial across the UK.	3.9.1 Trial Proposal 3.9.2 Assess Results	Q4 2001 Q2 2002	***High power trial undertaken*** ***Report completed Q3 2002. Was delayed as a result of resources being diverted to the ITC retendering exercise***
3.10	**PRODUCE TRANSITION PLAN OPTIONS** Produce a range of plans to allow for the full transition to DTT only use of the spectrum	Outline Plan	Q3 2002	***Report completed for consideration by ministers***
3.11	**AGREE SWITCHOVER SEQUENCE** Based upon outline transition plan make recommendation on the geographical phasing of switchover	Agreement	Q4 2003	Interim report due in Q2, 2003
3.12	**PRODUCE OUTLINE TRANSITION PLAN** Subject to 2.12 and 2.16, agree and develop an outline transition plan to deliver the required level of DTT coverage, whilst minimising the impact on viewers	Plan	Q3 2003	Need to include consideration of the role of self-help schemes within DTT areas
3.13	**QUANTIFY ANALOGUE COVERAGE**	Report	Q4 2003	
3.14	**TECHNICAL APPRAISAL OF POST-SWITCHOVER MODE** and options and implication for analogue conversions	Report	Q1 2004	Dependent on 5.9.3 survey work
3.15 (new)	**REVIEW MULTIPLEX PATTERN** to finalise which multiplexes will be converted, carrying which services	Broadcaster proposals?	Q1 2004	Dependent on assumption about mode used post-switchover

SECTION 4: MARKET PREPARATION GROUP

	TASK	ACTION	TIMING	STATUS
4.1	**CO-ORDINATE CLEAR INFORMATION FOR PRE-CHRISTMAS SALES** Tackle lack of consumer understanding of digital television by: • UK retailers and manufacturers co-ordinating an awareness campaign amongst their staff and consumers. • DTG launching guidance for retailers agreed by manufacturers, broadcasters and retailers as part of UK-wide programme to improve quality of advice provided by sales staff • Working with industry to make information on digital television services readily available for consumers through traditional and new media. Broadcasters to broadcast clear and simple message about availability of digital television building on existing cross-marketing opportunities.	Launch publicity material, website and make broadcasts	Q4 2001	*Complete*
4.2 4.2.1 4.2.2 4.2.3 4.2.4	**STRATEGIC MARKET & COMMUNICATIONS (MARCOM) PLAN** Directly and indirectly the key players in the market are spending large sums on promoting digital TV to the mass market. To achieve switchover, there will have to be greater co-ordination of corporate MARCOM than at present. The MARCOM group will liaise with market players as necessary to align Marcom strategies and messages. Draft, implement and develop a strategic marketing and communication plan to prepare the retail market and consumers for switchover. It will make recommendations on activities and resources. **Information campaigns should contain the following key elements:** a) a clear explanation of the differences between the terrestrial, cable and satellite platforms, as well as FTA, Pay TV, interactive DTV and internet access including broadband applications where applicable; b) accurate information on the extent of coverage for PSB services across all digital platforms c) stress that free-to-air Digital TV is available as well as subscription services d) make publicly-owned users of televisions aware of what DTV is, and the need to switchover and Government Departments to communicate information to schools, hospitals, prisons etc;	Ongoing. 4.2.1 Outline Plan 4.2.2 Update Plan 4.2.3 Strategic framework 4.2.4 Delivery	 Q1 2002 Q2 2002 Q3 2003 Q4 2003	 Initial report complete Complete, published on the website Delayed from Q2, but work well-advanced Ongoing

	TASK	ACTION	TIMING	STATUS
	e) implement campaign on television antenna requirements (testing for digital); f) involve dissemination through a variety of media, e.g. information leaflets, web-site information, and a co-ordinated campaign on all channels, particularly the Public Service channels.			
4.3	**BBC TO PROMOTE DIGITAL TELEVISION** BBC to draw up and produce a plan to promote digital television BBC to undertake a campaign to promote the uptake of digital TV and radio services and equipment generally.		Q4 2001 Q4 2001 & Ongoing	***Complete*** ***Plans published and being implemented***
4.4	**GOVERNMENT-LED INFORMATION CAMPAIGN** Government to keep under review the timing of any Government-led public information campaign, considering the rate of take-up of digital services; the availability and range of digital equipment and choice of platforms.		Ongoing Review Q1 2003	Under review within context of wider MARCOM strategy
4.5	**COMMISSION RESEARCH ON VIEWERS' NEEDS** Commission research on consumers' needs and expectations in the light of the recommendations of the Viewers Panel, and initial findings of the Go Digital project.	Commission research	Q2 2002	MORI survey published on the website. Further research ongoing
4.6 4.6.1 4.6.2 4.6.3 4.6.4	**REVIEW NATIONAL TRAINING PLANS** Propose strategy to ensure an adequate skills base to cope with the implications of a growing DTV market, and digital switchover (aerial fitters, sales staff, transmission engineers etc) joint activity between DTI, DfES and Industry	Ongoing Initiate Develop Follow up Implement	 Q4 2002 Q2 2003 Q3 2003 Q4 2003	 Initial work on aerial installers Must include retailers
4.7	**IMPLEMENT NEW LABELLING SCHEMES** Strengthen awareness and use of the already established DVB logo labelling scheme to provide consumers with additional information on what different types of digital equipment can deliver to the viewer	Initial Proposal Ongoing	Q1 2002 Q2 2002	Part of report for 4.2 Review with broadcasters and industry in context of 2.6 and work of ad agencies under 4.2
4.8	**PUBLISH INFORMATION REGARDING DISTRIBUTION SYSTEM UPGRADES** Local authorities and landlords to receive information about digital services, switchover, and how they can upgrade existing distribution systems in blocks of flats.	Publish advice	Q4 2001	Guidance published May need follow-up after completion of 2.25.2

	TASK	ACTION	TIMING	STATUS
4.9	**RESEARCH INTO MARKET CONDITIONS** Determine whether further research is needed to enable Government and Industry to better understand and consider the likely market conditions for DTV during the rest of this decade.	Interim report	Q1 2002	Part of report for 4.2
4.10 (new)	**SET UP COMMUNICATIONS STRATEGY GROUP** with professional support	Implement	Q3 2003	

SECTION 5: TECHNOLOGY AND EQUIPMENT GROUP

	TASK	ACTION	TIMING	STATUS
5.1	**DEFINE RANGE OF TECHNICAL ISSUES** Define the full range of equipment and technology issues to be resolved, including: • access controls • aerial boosters/retransmitters (leaky feeders, active gain/and window aerials) • automatic retuning • continued use of PAL encoders • data standards • "digital-ready" equipment • diversity reception • home networks • infra-red controllers/blasters • interconnects with legacy analogue equipment • receiver power consumption • return channel connections (e.g. telephone) • security (against theft) • timer/programming controls • use of 8K • user interface	Ongoing Initial scoping report	Q2 2002	***Report completed, published on the website.***
5.2	**ANALYSE THE NEEDS OF THE DISABLED** Consider the specific equipment needs of disabled people, and their funding in conjunction with NGOs, charities, DTI, DCMS and DWP.	Ongoing Initial Report	Q2 2002	***Included in main report (see 5.1)***
5.3	**ADDRESS NEEDS OF MULTIPLE EQUIPMENT HOUSEHOLDS** Consider how to achieve digital conversion for second and subsequent TV sets and VCFs	Scoping Report	Q2 2002	***Included in main report (see 5.1)***
5.4	**ASSESS EFFECTIVENESS OF IN-HOME NETWORKS** Consider the contribution which practical in-home networks can make to digital conversion for second and subsequent TV sets and VCRs	Report	Q3 2003	

	TASK	ACTION	TIMING	STATUS
5.5	**DEFINE LOGISTICAL REQUIREMENTS** Quantify estimates of material and logistical requirements to ensure sufficient equipment is available for switchover. The estimates will need to cover the full range of digital TV products (TVs, VCRs, set-top boxes etc) as well as equipment to convert existing analogue TV installations	Initial report	Q3 2002	Issues identified for inclusion elsewhere in Action Plan (see 7.8 & 7.11)
5.6	**DEFINE AERIAL/ANTENNA INSTALLATION ISSUES** Quantify the extent of the aerial/antenna installation issues (realignment, replacement etc), including satellite reception, which are likely to be posed by switchover	Report	Q2 2002	***Included in main report (see 5.1)***
5.7	**INVESTIGATE TECHNOLOGY TO OVERCOME PLANNING RESTRICTIONS** Conduct Technical research to enable the satellite DTV industry to cope better with the existing planning restrictions	Report	Q2 2002	***Included in main report (see 5.1)***
5.8	**REPORT ON DISPOSAL OF OBSOLETE EQUIPMENT** Draw up a strategy to address the disposal of redundant equipment (NB, by the time of switchover the WEEE Directive will be in place).	Ongoing Report	Q3 2003	

RECEPTION ISSUES

	TASK	ACTION	TIMING	STATUS
5.9 5.9.1 5.9.2 5.9.3	**COMMISSION SURVEYS** a) Survey of receivers and aerial configurations (joint DTI and ITC) b) Evaluate conversion of MATV and SMATV systems c) Survey of aerial and reception (joint with spectrum planning) NB: includes set-top reception	Report Report Report	Q1 2003 Q3 2003 Q4 2003	a) Complete
5.10 5.10.1 5.10.2	**TRANSMISSION MODES** Evaluate the reception benefits of reducing the capacity of DTT services and recommend appropriate transmission modes and supportive actions for the UK	5.10.1 Report 5.10.2 Report after ITC analysis	Q3 2002 Q1 2003	First stage complete. Second stage to follow ITC evaluation. Follow-up work under 5.9.3 c

	TASK	ACTION	TIMING	STATUS
5.11	**8K MODULATION** Evaluate the practical benefits of 8k modulation on reception and, if appropriate, recommend migrating UK transmissions to 8k	Report	Q1 2003	***Complete - provided both 2k and 8k options in receiver spec. (5.15)***
5.12	**ADVANCED RECEIVING TECHNIQUES** Evaluate the reception improvement that might be gained by employing advanced receiver techniques, including pulse suppression systems and diversity reception.	Report	Q4 2003	
5.13	**PRODUCT AND INTEROPERABILITY TESTING AND SUPPORT** Review the relevant testing of DTT products entering the UK retail market and make recommendations on the appropriate level of technical testing that should be applied to products sold in the UK. Needs an ongoing regime for software downloading. There could be a regulatory dimension (whose responsibility?) and spectrum planning implications	Report	Q3 2003	Delayed from Q2 2003

DIGITAL CONVERTERS

	TASK	ACTION	TIMING	STATUS
5.14 5.14.1 5.14.2 5.14.3	**IMPROVING UK AERIAL INSTALLATIONS** Co-ordination for improving the quality of aerial installations in the UK Implement benchmarking of aerial and cabling and review aerial and installation staff training and qualifications.	5.14.1 Report 5.14.2 Audit 5.14.3 Augment	Q2 2003 Q3 2003 Q4 2003	Aerial benchmarking initiated
5.15	**STRAWMAN DTT SPECIFICATION/FEATURES LIST** Compile a list of desirable features for DTT receivers and draft a "Strawman" proposal for the features a baseline DTT receiver could be expected to offer. If agreed, this work could be extended to include the features, which should be included in higher profiles of device.	Report	Q1 2003	***Completed June 2003***
5.16	**REMOTE CONTROLS** Investigate the range of problems associated with the use of multiple remote controls, and propose mechanisms for simplifying the situation in the home	Report	Q2 2003	***Completed***

	TASK	ACTION	TIMING	STATUS
5.17 5.17.1 5.17.2	**POWER CONSUMPTION** Make recommendations on digital receivers' power consumption requir. nents in conjunction with the Market Transformation Programme and investigate ways that such requirements can be incorporated in product testing Follow-up: audit of energy costs and benefits	Ongoing 5.17.1 First report 5.17.2 Analysis	 Q4 2002 Q2 2003	 TEG paper December 2002 Paper for CBA team. Work ongoing.
5.18	**PRODUCE NEW INTERCONNECTION GUIDELINES**	Report	Q3 2003	

INTEGRATED DIGITAL DEVICES

	TASK	ACTION	TIMING	STATUS
5.19 5.19.1 5.19.2 5.19.3	**RECORDER TECHNOLOGY** Hold a workshop on "video" record technology Follow up work on VCR converters and advanced programme information (for EPGs)	5.19.1 Workshop 5.19.2 Report 5.19.3 Follow-up	 Q1 2003 Q3 2003 Q4 2003	 Held by Intellect, January 2003 Delayed from Q2 2003

PLATFORM INTEROPERABILITY

	TASK	ACTION	TIMING	STATUS
5.20	**MHEG STANDARDISATION** Support work in ETSI to standardise the MHEG specification.	Report	Q1 2003	***Complete follow-up as normal business***
5.21	**MHEG/MHP CO-EXISTENCE** It is recommended that the Action Plan should support a theoretical study to practically demonstrate the coexistence of the MHEG and MHP software platforms on the DTT platform	Report	Q3 2003	

HUMAN ASPECTS

	TASK	ACTION	TIMING	STATUS
5.22 5.22.1 5.22.2 5.22.3 5.22.4	**FURTHER ACTION ON INCLUSIVE DESIGN/USABILITY** Recommend further activities to promote adoption of inclusive design and usability principles in the light of information from the Scoping Study, Go Digital pilot and the Inclusive Design seminar.	5.22.1 Workshop 5.22.2 Further work 5.22.3 5.22.4	Q4 2002 Q1 2003 Q3 2003 Q4 2003	Easy TV seminar, November 2002 Intellect involvement Intellect workshop Review implementation

	TASK	ACTION	TIMING	STATUS
5.23	**ACCESS FOR DEAF AND PARTIALLY SIGHTED PEOPLE** Investigate the hardware requirements for reception equipment to access services such as Subtitling, Signing, and Audio Description.	Report	Q4 2003	RNIB conference took place in Q2. A further follow-up report is now scheduled for Q4. The aim should be to seek a resolution to the issue of audio-description reception.
5.24	**LIAISON WITH WORK ELSEWHERE ON DIGITAL RIGHTS MANAGEMENT**	Report	Q2 2003	Initial review completed. Ongoing
5.25 (new)	**PLAN DEMONSTRATION OF COSTED CONSUMER EQUIPMENT** propositions for converting households of different types	Demonstration	Q3 2003	Probably best held in Q4. Should include recording as well as reception equipment.

SECTION 6: DIGITAL TELEVISION PILOT PROJECTS

	TASK	ACTION	TIMING	STATUS
6.1	**ESTABLISH SWITCHOVER PROJECT** Launch a pilot project to develop understanding of switchover issues	Establish project	June 2001	***Complete***
6.2	**ANALYSE EXISTING SURVEY WORK** Utilise all existing consumer information relating to digital households to inform the pilot projects programme.	Report	Q4 2001	***Complete***
6.3	**PRODUCE INTERIM REPORT** Assess results of phase 1 and develop and implement plans for subsequent phases	Report	Q2 2002	***Complete***
6.4	**ESTABLISH PHASE 2/ FINAL REPORT** Carry out Phase 2 and publish conclusions	Report	Q1 2003	***Complete end of March 2003 publication mid April***

FURTHER PILOTS

	TASK	ACTION	TIMING	STATUS
6.5	**DTT ZONE PILOT** Consider setting up a small DTT test-bed zone without any analogue transmissions, where the DTT spectrum and reception conditions applicable to switchover and post-switchover can be investigated.	Initial scoping Proposal Then develop	Q1 2003	Initial paper and discussion with TDN Ongoing into 2004
6.6	D-SAT PILOT Investigate whether or not to conduct D-Sat pilot for D-Sat only areas and if so, where and when	Initial consideration	Q1 2004	

SECTION 7: PROJECT CO-ORDINATION AND MANAGEMENT

PROJECT MANAGEMENT RESPONSIBILITY

	TASK	ACTION	TIMING	STATUS
7.1	**DRIVING PROJECT FORWARD** Establish Project Steering Board, chaired by Ministers Appoint dedicated project manager reporting to Ministers to provide focal point for all stakeholders within Government, business and consumer bodies. Establish Project Team, and management/ reporting structure.	Terms of Ref. Appoint Project Manager Appoint team	Q4 2001 Q1 2002 Q4 2001	***Complete*** ***Complete*** ***Complete***
7.2	**SET UP TASK GROUPS** Set up Task Groups to take forward specific areas of the Action Plan.	Terms of Ref.	Q4 2001	***Complete***
7.3	**ESTABLISH REPORTING FRAMEWORK** Establish regular reporting/review framework and milestones.	Draft Action Plan	Q4 2001	***Complete***
7.4	**SECURE PRINCIPAL GROUP SUPPORT** Secure commitment of the Government Digital Television and Stakeholders Groups to the Action Plan	Approve Action Plan	Q1 2002	***Complete, Stakeholders meeting held on 25th Jan 2002***
7.5	**IDENTIFY FUNDING CONSTRAINTS** Quantify and address any funding constraints which might hinder the work of the Task Groups	Ongoing,	Q1 2003 Q4 2003	Reviewed Further review
7.6	**COMMISSION EXTERNAL CONSULTANCY** Identify areas where external consultancy advice could usefully inform the Project. Take timely action to engage the necessary consultancy.	Ongoing	Review next Q4 2003	Consultancy work commissioned to date includes Human Aspects work and various technical studies

SWITCHOVER IMPLEMENTATION

Switchover itself is expected to be staged over a period of years. A substantial infrastructure will need to be in place to provide consumer support over the transitional period. This action plan will need to be further developed in order to manage the switchover process. It is considered premature to define tasks at this stage beyond noting that a significant exercise will be required.

	TASK	ACTION	TIMING	STATUS
7.7	**SWITCHOVER IMPLEMENTATION/SUPPORT** Put in place infrastructure (help lines, waste disposal etc.) to manage the transition	Ongoing 1st Report	2 years before switchover	

	TASK	ACTION	TIMING	STATUS
7.8	**EVALUATE LOGISTICS OF INSTALLATION** Related modelling work required	Report	Q3 2003	

RECEPTION ISSUES

	TASK	ACTION	TIMING	STATUS
7.9 7.9.1 7.9.2 7.9.3	**RECEPTION DATABASE** Consider with JPP and DTG how to maintain and develop the "postcode" database.	7.9.1 Proposal 7.9.2 Agree DTG & JPP 7.9.3 Implement	Q1 2003 Q3 2003 Q3 2004	Project team paper

BUDGET/BUSINESS PLANNING

	TASK	ACTION	TIMING	STATUS
7.10	**DEVELOP PROJECT BUDGET / BUSINESS PLAN**	Initial Plan Further Work Finalise	Q2 2003 Q3 2003 & ongoing Q3 2004	Framework mapped out with Project team
7.11 (new)	**START TO MODEL RECEPTION EQUIPMENT TAKE-UP:** review and plan with Intellect	Plan	Q4 2003	
7.12 (new)	**DESIGN SUCCESSOR ORGANISATION**	Review options and adopt working hypothesis	Q4 2003	
7.13 (new)	**FORMULATE MEMORANDUM OF UNDERSTANDING** between government, broadcasters and manufacturers	Draft	Q4 2003	

APPENDIX: Terms of Reference for Main Working Groups

GOVERNMENT DIGITAL TELEVISION GROUP

Purpose

The Government has set out two fundamental aims for the future of digital television in the UK. In September 1999, the criteria to be achieved for digital television before analogue terrestrial television broadcasts could be switched off were set as

- everyone who could currently get the main public service broadcasting channels in analogue form must be able to receive them on digital systems
- switching to digital should be an affordable option for the vast majority of people, (and as a target indicator of affordability 95% of consumers must have access to digital equipment)

with an expectation that these criteria would be met in the period 2006-2010.

In *Opportunity for all in a world of change* published in February 2001 the aim was set for "the UK to have the most dynamic and competitive market for digital TV in the G7, as measured by take up, choice and cost."

In addition, digital television has a part to play in delivering a number of other Government objectives, including universal Internet access by 2005 and the delivery of e-Government services by 2005.

The Government Digital Television Group brings together those Departments responsible for developing and delivering these policies for digital television, to ensure that recommendations to Ministers are co-ordinated. In particular it provides a forum for considering, where different Departments lead on making recommendations, how those recommendations impact on the delivery of the digital television action plan. The Steering Group gives guidance to the Project Team responsible on a day-to-day basis for delivery of the action plan.

Membership

The Government Digital Television Group is chaired jointly by DTI and DCMS, the Departments charged jointly by the Prime Minister with achieving digital switchover. Those Government Departments and offices with a direct involvement in the development of relevant policy will be members, including the Office of the e-envoy, HM Treasury, the No 10 Policy Unit and the Radiocommunications Agency. The relevant independent regulators – ITC and OFTEL – are invited to attend.

Mode of operation

The Government Digital Television Group meets once a month. It also remains in contact by e-mail for taking forward policy issues between meetings. The Project Team provides the secretariat.

SPECTRUM PLANNING GROUP

Purpose

The Spectrum Planning Group will develop a range of planning options and outline assignment plans as required by the Digital Television Action Plan. It will also provide technical support and analysis to the Government Digital Television Group and Stakeholders Group in matters concerning spectrum policy.

Membership

Membership will normally comprise those organisations who are responsible for television spectrum planning and co-ordination in the UK. This will include representatives from the ITC, BBC, Radiocommunications Agency, DCMS and DTI. It may also include subcontractors who are working directly for one or more of the Group's members.

Mode of Operation

- The Group will meet regularly. It may also set up specific sub-groups to carry out elements of the work.
- The Group will carry out the tasks assigned to it within the Digital Television Action Plan.
- When carrying out tasks assigned to it by the Action Plan the Group will seek to organise its work in such a way as to:
    - Permit the Radiocommunications Agency to initiate international frequency co-ordination;
    - Identify the achievable coverage for digital services from the selected sites (in geographical and population terms) using the latest agreed coverage prediction model (UK Planning Model).
    - Prepare outline planning papers suitable for informing and advising the development of government policy within the Digital Television Action Plan, based upon the system implemented by the UK digital broadcasters, the planning criteria defined in the Chester 97 agreement, and any subsequent parameters agreed between the Group's members.
- The Group will prepare and regularly review a Project Plan. This will comprise objectives, timescales and deliverables that will be linked to the requirements of the Digital TV Action Plan.
- The Spectrum Planning Group's activities will have no implications for the IPR ownership of the work carried out by or on behalf of the Parties to this Agreement.
- All information, not already in the public domain, exchanged between the members of this Group in the course of the work being carried out within the Group will remain confidential to the Parties concerned.

- Any deliverables produced by the Group will have to be approved by all members of the group prior to being distributed to other Groups within the Action Plan Project.

MARKET PREPARATION GROUP

Purpose

The Market Preparation Group will develop and co-ordinate a coherent cross industry strategy to raise awareness and knowledge of both industry and the public of digital television. This will include the deployment of the required resources to manage this process.

The Group will:

- Draft, maintain and develop a strategic marketing and communication plan to prepare the retail market and consumers for switchover. This should include:

    1. identifying and co-ordinating the key elements of the "digital proposition," and recommendations on the means by which the relevant information can best be provided.

    2. utilising the already established "DVB" labelling scheme, setting up and promoting accurate communication campaigns to inform consumers on digital equipment.

    3. identifying and targeting groups such as private and public landlords and advising them on the distribution systems available to them.

- Ensure that the needs of groups less likely to switch spontaneously are well addressed.

- Identify and address issues relating to TV used in schools, prisons, libraries, hospitals; etc.

- Identify any needs for training (retail shops, installers, engineers, call centres. etc.)

- Determine what research, or information is required to enable Government and Industry to better understand the likely market conditions for DTV.

- It will also need to co-ordinate activities involving both government and industry leading up to switchover itself, addressing both professionals and the public.

Membership

Membership of the Market Preparation Group is open, but we expect the Group to include representatives from the main broadcasters, manufacturers, retailers and consumer groups.