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DVB[®]T
TERRESTRIAL



DTT DVB-T Trial

2

DVB[®]T2



DTT DVB-T2 Trial

3



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Freeview[★]HD

DVB-T2 & DSO

DTT: Implementation Lessons

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1

SABC and e.tv's DVB-T trial

Objectives:

- Conduct technical tests on video and audio and demonstrate use of MHEG-5
- To test decoders and verify coverage predictions
- Test user experience and consumer reaction, and identify installation issues

Trial specification:

- DVB-T, MPEG-4 AVC, HE-AAC, MHEG-5 and 22.39Mb/s capacity
- Three transmitters in Johannesburg, Pretoria and Durban (with SFN in Gauteng)
- FTA with 11 video streams and 19 radio channels

Reaction:

- Positive response – 87.2% of trialists said it was worth the effort
- 1.5Mb/s for video and 64Kb/s for audio
- Good response to radio channels, and potential for audio description and closed caption subtitles demonstrated

M-Net and e.tv's DVB-T2 trial

Objectives:

- Demonstrate the potential and benefits of DVB-T2 above that of DVB-T
- Test DVB-T2 in a single frequency network environment

Trial specification:

- DVB-T2, MPEG-4, MHEG-5 and 33.2Mb/s capacity – a near 50% capacity increase
- Four transmitters – Hillbrow Tower, Sandton, Randburg and Sentech Tower
- FTA with 18 SD video streams increasing to 20 plus radio and interactivity
- Used off-the-shelf Freeview HD decoders with UK DVB-T2 profile

Reaction:

- Positive response from trialists – love the quality and quantity of channels
- 50% of trialists needed installation assistance
- Extensive interest from stakeholders



3

The UK's digital television switchover

Infrastructure:

- 67 main transmitters and 1,080+ relay transmitters
- Biggest single broadcast engineering programme ever undertaken in the UK

Converting:

- 26 million homes to digital television (terrestrial, satellite and cable)
- 60 million television sets (12m remain analogue with two years to go)
- Largest public change programme since Decimalisation in 1971 and Gas Conversion 1968-1976

Implementation:

- 4 year structured and coordinated roll-out programme
- 500+ national stakeholders and 300+ local stakeholders
- 7,000+ retailers and manufacturers and 1,000+ housing providers



3

The UK's digital television switchover

To date, programme is successful and on time:

- 26.6% of the country has completed switchover (after 2 years) with 7.1 million homes now fully digital
- 98-99% household conversion on the eve of each switchover
- Everyone does convert - no evidence of 'refuseniks'
- 90% say they are comfortable with the process with help and support available for those that are not
- Around 1% of the population call Digital UK for advice
- 360,000+ (c.7% homes) have taken up the Help Scheme
- Press coverage 96% positive / factual at each switchover

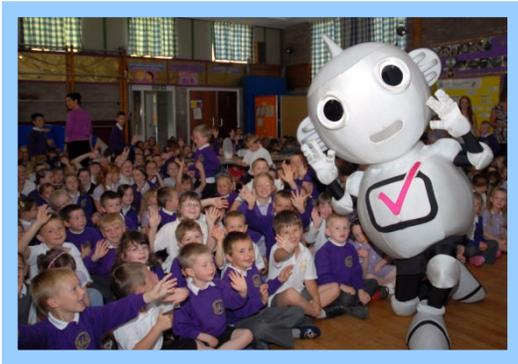


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Launched HD on DVB-T2 during switchover

- In 2009, the BBC converted one of its two DTT DVB-T multiplexes to DVB-T2 and provided HD services on the DTT platform – Freeview HD
- This required a channel re-organisation right in the middle of the switchover programme
- Launch of Freeview HD using DVB-T2 was successfully integrated into the switchover programme with retrospective migration - not only was the UK managing analogue to digital conversion but also digital to digital conversions, as areas that had already switched over to DVB-T 'lost' channels in the re-organisation and needed to be communicated to
- Sales of T2 decoders slower than at DVB-T launch as T2 is widely incorporated into digital TVs – it's become the standard, but price of decoders has more than halved since launch





- Public change programmes such as a national digital switchover must provide real, tangible benefits to consumers
- Need to carefully consider when is the best time to implement to ensure success – too many risks associated with running ahead of the market
- Need an established base of digital households in place before everyone else converts through a switchover programme – the tipping point



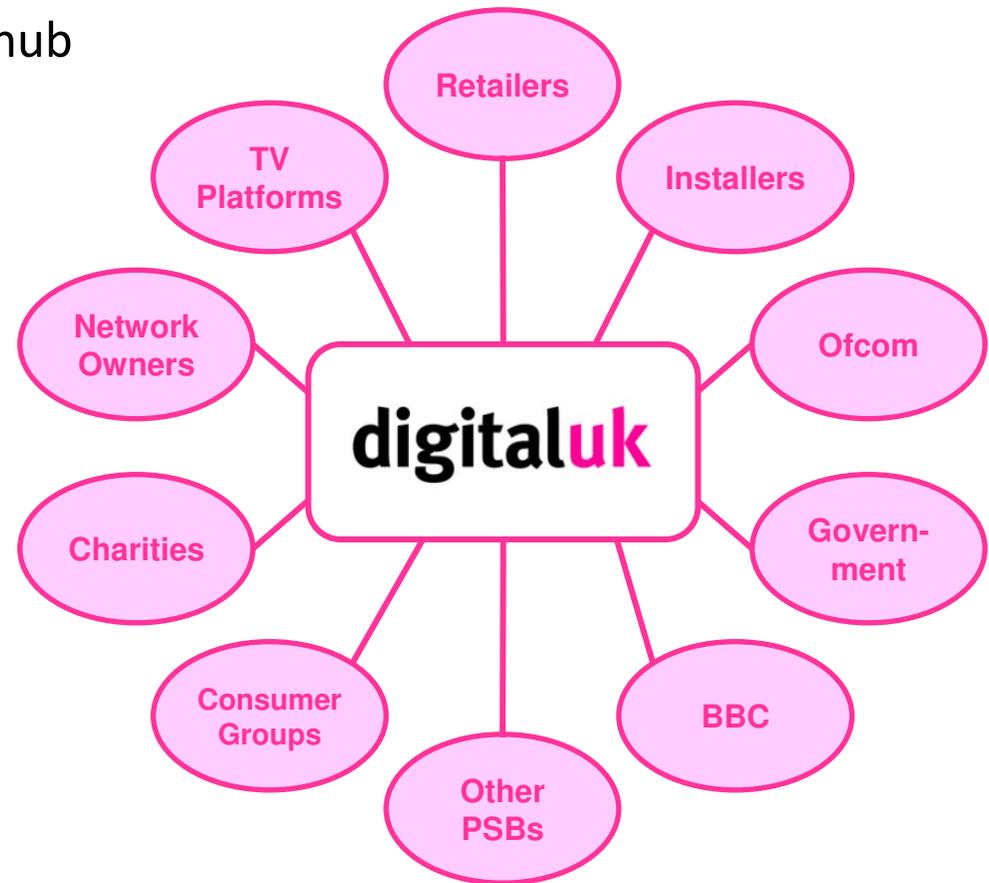
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Switchover is a consumer change programme not a technology project

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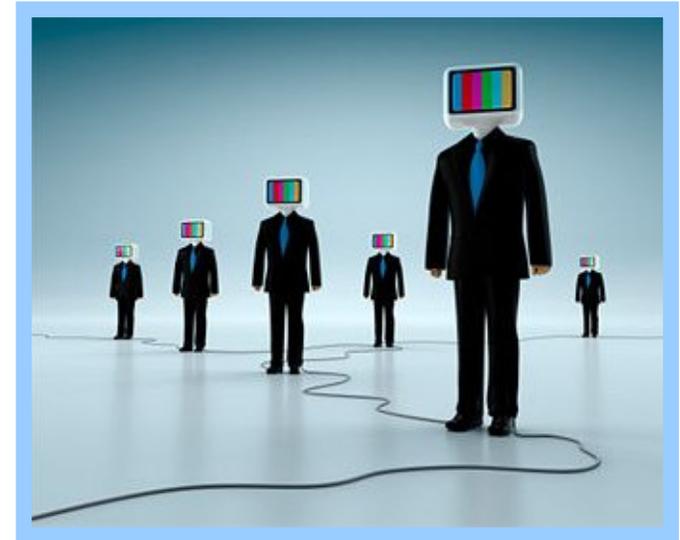
- Digital UK acts as central organising hub
- Single-purpose organisation created specifically to achieve DSO
- Co-ordinates stakeholders and manages the plan
- Responsible for programme management
- Ownership of targets and Critical Success Factors
- Objective is successful delivery of whole programme
- Secured funding



A single-purpose, centralised delivery model with a clear remit is required

2

- Regardless of individual priorities and objectives, every stakeholder and player in the market needs to work collaboratively together on delivering a successful DTT platform launch and then a digital switchover
- In a horizontal market no one stakeholder has control or is dominant – the centralised delivery organisation needs to ensure that collaboration and involvement is driven across the programme
- The reward is that all consumers benefit and as a result so will the industry stakeholders



All industry stakeholders need to collaborate for DTT commercial launch and switchover

3

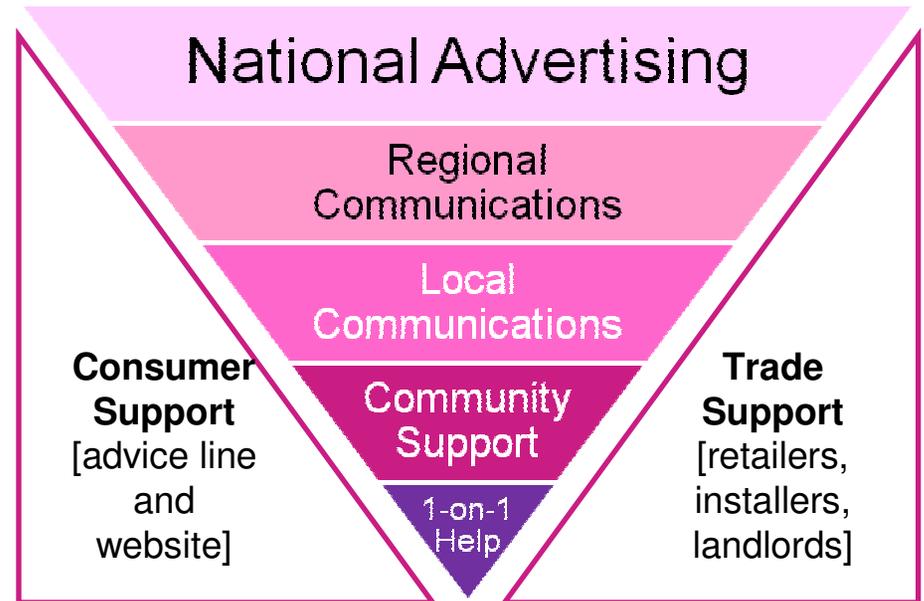


- During the T2 trial very few calls have been received by the call centre – not normal experience to call operators of free television services and the cost of making the call is prohibitive
- Trialists would just not watch the TV (if the decoder was not working) than call the call centre
- M-Net and e.tv established an out-bound call campaign to ensure that trialists were not experiencing problems
- Asking questions via SMS could be appropriate as almost everyone has a cell phone. Instead of a call centre establish a SMS Centre – consumers SMS questions in the language of their choice and are replied to with stock answers or tailored responses

Communications need to be tailored with clear messaging and feedback channels

4

- Not every household knows what digital television is, how to plug in a decoder, use a remote control and align an aerial
- Trials in South Africa have shown that many homes have very poor antennas. On the T2 trial 14 of the 60 homes required a new antenna and 50% needed installation support
- Open sessions and demos in community centres have worked well with the support of charities and community groups – for launch, pre- and post- switchover



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Communications need to reach deep into communities with on the ground support

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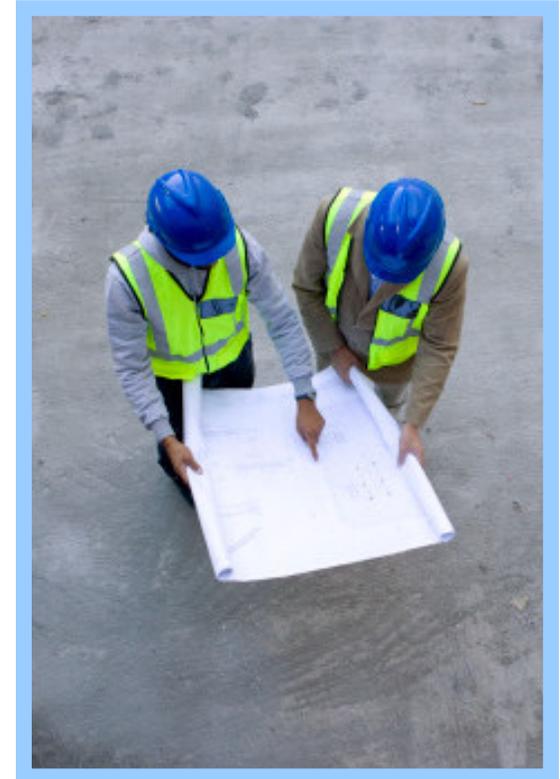
- The DVB-T trial showed that trialists loved the extra free television channels and the DVB-T2 trial shows that trialists like the good variety of channels
- Radio takes up little capacity on the multiplex and provides consumers with a full range of language services that are regional on FM
- Access services are possible – closed caption subtitles and audio description
- Potential of multiple language and interactivity
- Quality of the pictures is much better
- Trialists like the now / next functionality of the EPG and the quick access to channels

**The service offering is critical
to ensure take-up**

- DVB-T is a proven technology – its widely implemented across the world, reliable and tested
- DVB-T2 – as the next generation technology - works even better and is now being adopted by many countries
- The use of single frequency networks delivers a strong signal and increased reliability
- Because of the nature of analogue and DTT transmission it is not possible to match coverage – therefore need to ensure the coverage plan ensures no one loses access to terrestrial television at the switch-off of analogue television
- Industry needs to work on one roll-out plan and that plan needs to be integrated with marketing, and the supply and availability of decoders
- Regional coordination needs to be proactively managed to ensure success in every SADC country

**The technology works but depends on
good plans being in place**

- The centralised delivery model needs to ensure that technical infrastructure and communications (consumer, press, trade and stakeholder) are aligned
- Side-by-side working ensures that those responsible for making technical changes and those charged with marketing those changes understand the necessary details
- Parallel planning of infrastructure and communications makes it possible to design a regional communication plan to accompany regional roll-out of switchover



Alignment of infrastructure and communications workstreams is critical

8

- The roll-out plan for switchover needs to be centrally managed and clearly communicated
- A large scale programme with multiple dependencies should only announce dates when work is sufficiently far advanced to give confidence that those dates can be met
- Use of aspirational dates (that can subsequently change) undermines public confidence
- It is useful to have or create a moment of compulsion that drives consumer action

26/01/11	48	5	(+0)	H1	56	66	53		63/45	61/42	58	2kW (+3) FuUPC	2kW (+3) sk62 TU
			Horsfield (+0)	Existing	52	64	67		34	29	47	48	54
				L1	52	64	67		34	29	47	48	54
			Bluebell Hill (+0)	Existing	46	43	65		59	24	45	27	42
L1	46	43		65		59	2kWF 4kWBcast	45	2kWF 4kWBcast	42			
01/02/11	50	1	France Picardie	Analogues in Picardie (Amiens, Abbeville)									
			France Haute Normandie	Analogues in Haute Normandie (Le Havre, Neufchatel, Rouen)									
			France Nord	Analogues in Nord (Boulogne, Dunkerque, Lille)									
02/03/11	52	1	Boacan Hill (+0)	Other				60	53	57	42	45	
				Other				60	53	57	42	45	
23/03/11	52	4	Lark Stoke (+0)	Existing	26	23	29		21	31	27	24	57
				L1	26	23	29		21	31	27	24	57
			Bluebell Hill (+0)	L1	46	43	65		59	24	45	27	42
				L1 if Expedited	46	43	65		59	4kWF (+3JB) 24	45	4kWF (+3JB) 27	42
30/03/11	54	1	Sandy Heath (+5)	Existing	27	24	21	39	42	45	67	43	40
				DS01		24	21	39	Antrozn 200kW L 100kW Beach	27	45	67	43
			Nattigham (+0)	Existing	27	24	31	34	54	67	63	63	62
				DS01		24	31	34	27	67	40W (+3JB) FuUPC	53	40W (+3JB) FuUPC
Walkham (+0)	Existing	64	61	54	35	49	23	33	26	45			
	H1	64	61	54	35	49	23	33	8kW DTT ant FuUPC	45			
06/04/11	54	2	The Wrekin (+5)	Existing	33	23	29	35	38/28	49/31	45/27	42/24	53
				DS01		23	29	35	26	49/31	45/27	42/24	53
			Bramsgrove (+0)	Existing	27	24	21		34	29	23	33	34
				DS01		24	21		24	29	23	33	33
			Lark Stoke (+0)	L1	26	23	29		21	31	27	24	57
				DS01		23	29		21	31	27	24	57
Ridge Hill (+18)	Existing	28	25	32	35	53	57	63	60	42			
	DS01		25	32	35	28	57	63	60	42			

Timetable needs to be clear and attainable
with a 'moment of compulsion'



- The switchover programme needs to be comfortably budgeted for and funding secured
- All parties must have the confidence that the finances are available to complete the project successfully
- Budgets for the whole programme should be scoped from undertaking pilot switch-offs to assess the costs of communication, on the ground and installation support required

A switchover programme needs to have sufficient and safeguarded funding secured

10

Switchover is a consumer change programme not a technology project

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A single-purpose, centralised delivery model with a clear remit is required

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All industry stakeholders need to collaborate for DTT commercial launch and switchover

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Communications need to reach deep into communities with on the ground support

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The service offering is critical to ensure take-up

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DTT: Implementation Lessons

...with thanks to SABC, M-Net, e.tv and Digital UK