

**Interactive television  
- reaching your customers**

An Idetica White Paper



## About Idetica White Papers

Idetica White Papers represent our current business view on key issues within the CRM and eBusiness markets and are available on request from [whitepapers@idetica.com](mailto:whitepapers@idetica.com).

## About Idetica

Idetica is a consultancy that helps its clients identify, attract and retain profitable customers. We specialise in the application of Customer Relationship Management (CRM) and related eBusiness technologies to gain insight into customer preferences, open new on-line customer channels and create a secure and compelling customer experience.

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## The opportunity

The introduction of digital television and the enormous success of the internet has brought together two of the most powerful marketing channels to produce a dynamic new channel for mass market exposure and consumer interaction – interactive television (iTV).

In the two years since BskyB started digital transmissions, over 19% of UK homes have signed up to receive digital television and, with it, a range of new and innovative interactive services.

The number of UK homes receiving digital television will increase substantially over the next few years. The Government expects that over 94% of UK households will be able to receive digital television sometime after 2006. This will be considerably more than the number of households with access to the internet via a PC.

The high level of penetration and the fact that the average person spends 20% of their leisure time watching television mean that interactive television is going to provide a very powerful way of reaching customers.

By allowing consumers to be reached in their homes, interactive television provides organisations with a number of new capabilities. Advertising agencies, and ultimately their clients, will be able to obtain immediate consumer reaction to a commercial, enabling them to measure, quickly and accurately, the impact of a campaign. Retailers will be able to respond instantaneously with any appropriate additional information on products and services that the viewer may require, and new services such as home banking will be provided to viewers by transmitting an application, within the television signal, to the viewer's set-top box.

Throughout, the effective use of Customer Relationship Management strategies allows organisations to construct accurate customer profiles, enabling them to build personalised, relevant relationships with their customers.

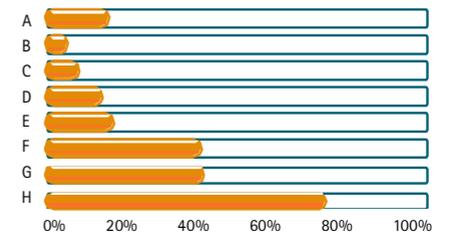
## Interactive services

Interactive services can be divided into two categories.

Enhanced services involve one-way transmission to the viewer. A typical example would be the Electronic Programme Guide (EPG), which provides viewers with a schedule of the programmes that can be seen on all the different channels. Fully interactive services allow viewers to send information back to the content/service providers. A typical example might be home banking, in which the viewer sends information, such as direct debit instructions, back to the bank.

A recent survey by Oftel has shown that the Electronic Programme Guide is still the most widely used interactive service, but more sophisticated services, such as online shopping and online banking, are starting to become more popular.

Percentage of consumers using available digital services (Source: Oftel)



- A None
- B On-line Banking
- C Internet Access
- D Email
- E Online Shopping
- F Download/playing games
- G 'Favourites' function
- H Electronic Programme Guides

*"The high level of penetration and the fact that the average person spends 20% of their leisure time watching television mean that interactive television is going to provide a very powerful way of reaching customers."*

## Case study – home shopping

To understand the implications that interactive television will have for retailers, consider the following home-shopping example in which a high street retailer wishes to sell its products to customers via interactive television.

The retailer needs to decide which digital television delivery platform to use as this will affect the way in which content is developed (due to the need to comply with the various different proprietary standards). The choice of delivery platform will also depend on its reach. A retailer seeking uniform national coverage may, for example, choose digital satellite, whereas a retailer that wanted to present slightly different offerings to different regions may choose digital cable.

Having chosen the delivery platform, in this case satellite, the retailer needs to develop a shopping application compatible with that particular delivery platform. In this simple example, the retailer may wish to develop an application that allows a viewer to navigate between different 'catalogue' screens containing a description of various items for sale together with a price.

The retailer then delivers this content to the chosen satellite digital television provider who separates it into an application and additional 'website' content.

The application data is merged with the programme stream to be transmitted to the viewer, while the website content is held in reserve on the digital television provider's e-commerce server in case the viewer requires more information.

It is important to note that this 'website' is not a true Internet website, since it exists on the satellite digital television provider's own closed intranet and not on the Internet. In contrast, OnDigital and ntl actually provide full access to the Internet via terrestrial and cable platforms respectively.

To access the service, the viewer makes the necessary selection on their remote control. The viewer's set-top box then extracts the application from the received programme stream and runs it, presenting the viewer with the catalogue screens and allowing the viewer to move through the various steps necessary to make a purchase.

If the viewer requires additional information at any point, the set-top box transmits the request back to the digital television provider's e-commerce server via a telephone line. The server then transmits information from the content provider's 'website' back to the viewer.

Having made a purchase, the viewer's set-top box transmits the order back to the digital television provider. Data transmission on the return path is also secure since it is encrypted and, in addition, the digital television provider is able to validate the identity of the viewer making the order.

The order is received by the digital television provider's e-commerce server where it is processed using a transaction management system. The digital television provider then notifies the retailer of the order and the customer details, and the retailer ships the goods directly to the customer.

## What does the set-top box do?

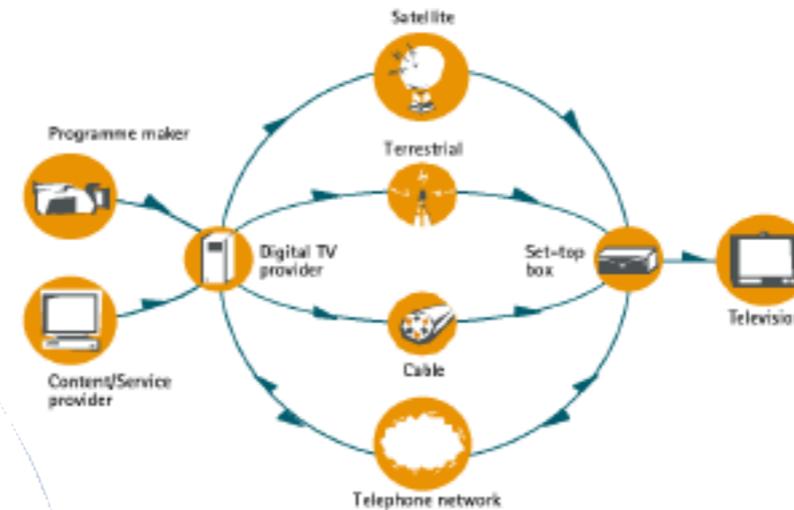
Interactive television would not be possible without the processing capabilities provided by the viewer's set-top box.

The set-top box receives the television signals and extracts and separates programme and content information. The set-top box is then responsible for displaying the television programmes and for processing the received content or for running any applications.

Content, such as additional information relating to a particular programme, is simply displayed on the television screen, usually as an overlay screen that sits 'in front of' the television programme.

Other interactive services, such as home shopping or banking applications, are run on the set-top box and the output is generally displayed by itself on the television screen.

*"Conditional Access ensures that the data sent inside the programme stream is secure."*



## The return path

Interactive content is of little value to viewers or content providers unless viewers are able to send information (such as a request to buy a particular item) back to the content provider. This is done using a return path.

Typically the return path is provided by a connection from the set-top box to the telephone network. Both Open (as the interactive arm of BskyB is known) and OnDigital have fitted their set-top boxes with built-in telephone modems (28.8Kps and 2.4Kps respectively) for the return path.

Cable companies use their own cable network for the return path. However, this means installing a modem that can transmit information at the very high radio frequencies necessary to traverse the cable network, which adds expense and complexity to the solution. At present, ntl offers cable modems to its subscribers, while Telewest relies on a telephony return path.

## Conditional access

The process of scrambling and descrambling digital television multiplexes is known as Conditional Access (CA).

Conditional Access ensures that the data sent inside the programme stream is secure. There are several different CA systems that are commercially available and each requires a different set-top box. Since the different UK digital television providers currently employ different CA systems, it is not possible to use one set-top box to access more than one digital television transmission platform.

A Conditional Access system will transmit the scrambler key, which allows the set-top box to decode the scrambled signal, to the set-top box in the form of an encrypted Entitlement Control Message (ECM). The ECM will only be used to decode received signals once the set-top box receives a further message known as an Entitlement Management Message (EMM). EMMs are generated by the broadcaster's subscriber management system which contains a database of valid subscriber smartcards. If the set-top box contains a valid subscriber smartcard, the EMM will allow the set-top box to use the scrambler key to decode the received television signals.

Once the signal has been descrambled, the set-top box separates out the individual programme streams and then reconstructs the moving images (it does this by comparing successive 'still' images and then reconstructing a number of intermediate images to give the illusion of movement). The reconstructed digital pictures are converted into an analogue signal that is passed on to a standard television screen.

The set-top box also extracts and processes any additional information (such as the Electronic Programme Guide) that has been sent in the transmitted multiplex. In order to perform this processing, each set-top box has an operating system that can run applications. The operating system is typically held in flash memory (that is, memory which can be updated remotely) and this means that it is possible for digital television providers to broadcast updates to the operating system when they become necessary.

The operating system is accessed through an Application Programming Interface (API). Since digital television providers have not settled on a common API, it is not possible to develop a single application suitable for all digital television platforms.

*"Sophisticated services, such as online shopping and online banking, are starting to become more popular."*

## Delivery platforms

In the UK, digital television is currently delivered by satellite, cable or by terrestrial broadcast network. Other telecommunications mechanisms that are not strictly broadcast, and which are based on adaptation of standard copper telephone wires (notably ADSL, but also HDSL and VDSL) are being introduced in the near future.

Skydigital, which transmits digital television via satellite enjoys the lion's share of the market, providing services to 76% of all digital TV homes.

OnDigital, the terrestrial broadcaster, has about 15% of the market and the cable companies, ntl and Telewest, have 5% and 4% respectively.

There are advantages and disadvantages associated with each type of delivery platform. For example, regionalisation of programme content using satellite transmission in the UK is complicated by the fact that coverage is achieved using a single satellite. However, since both digital terrestrial and cable rely on a variety of ground-based transmitters and/or distribution hubs, regional content (programming and commercials) can be introduced into the broadcast stream. This means that the interactive component can also be regionalised.

In contrast however, there is much more spectrum available for satellite transmissions than there is for terrestrial transmission. This means that satellite is able to offer a larger number of television channels than terrestrial transmissions. Satellite also has more spare capacity to be used for interactive services than is available on terrestrial networks.

Cable, however, is the fastest growing distribution medium for multichannel television in the UK, and with the rollout of digital cable services planned through 2000, the bundling of telephony, television and interactive services will no doubt challenge the dominance of both the terrestrial and the

digital satellite platforms. However, the expense associated with rolling out a cable network to individual homes means that cable coverage is currently concentrated in cities and other densely populated areas.

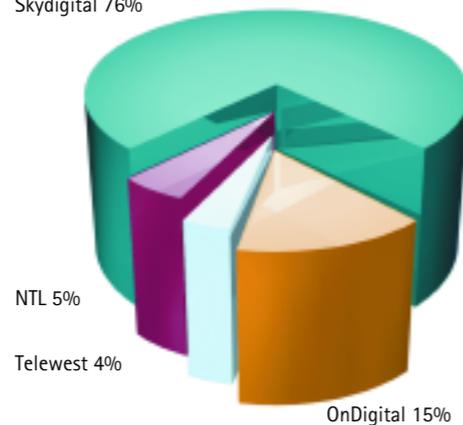
## Limited capacity

Each of these delivery platforms only has a limited capacity for delivering digital television. For satellite and terrestrial broadcasting, the limit is determined by the spectrum set aside for this purpose by the Government. Cable capacity is limited by the available bandwidth on the installed network of cables.

The limited capacity means that content providers are going to have to face competition for the space set aside by the broadcasters for interactive services. Companies that are late on the scene may find it more difficult to enter the market.

A number of companies are already providing interactive television services (see insets).

Skydigital 76%



The current market share for different delivery platforms (Source: Companies' own press releases)

### Skydigital

HSBC, Abbey National, Halifax, The Woolwich, Norwich Union, Going Places, First Choice, Argos, ASDA, Carphone Warehouse, Dixons, Comet, WHSmith, Somerfield, Thorntons, Next, Woolworths, Ford, Scottish Power, Mastercard, E\*Trade

### OnDigital

Abbey National, Cahoot, Virgin Travel, Travelcare, Thomas Cook, Bigsave.com, Iceland

### NTL

Tesco, ABC Traveltimes, Ticketmaster, Q, Empire, IMDb.com, Bargainholidays.com, Sporting Life

### Telewest

Norwich Union, Abbey National, Thomas Cook, Woolworths

*"Interactive television is not, however, the Internet on television. There are some significant differences."*

## The Idetica view

Digital television is going to replace traditional analogue television transmissions.

The Government is committed to increasing the number and variety of services available to consumers and has announced that all present analogue television transmissions will cease when virtually all viewers can receive digital services and when the cost of switching to digital becomes affordable for all viewers. The Government expects these conditions to be met sometime between 2006 and 2010. The Government hopes that this will prove to be a powerful driver, encouraging the update of digital television.

The recent auction for third generation mobile phone licences has shown that spectrum is a valuable resource. Since digital television channels occupy less spectrum than their analogue counterparts, the switch to digital television could release some spectrum which the Government could then sell to other users. This is likely to increase the Government's desire to complete the switch to digital transmission as soon as possible.

As digital television becomes more pervasive, the use of interactive television is also expected to grow. One report has put the expected growth at a potentially staggering annual compounded rate of approximately 62% (1999 – 2003), with new technology affording broadcasters and retailers the opportunity to offer a wider spectrum of services and level of interactivity.

Interactive television is not, however, the Internet on television. There are some significant differences.

For example, digital television is a much more highly regulated channel than the Internet. Broadcasters have to be licensed by the Government, and this places them in a powerful position, allowing them to control the content that reaches viewers. In contrast, anybody with a telephone line can place content on the Internet.

Broadcasters' positions are strengthened through the use of proprietary operating systems for set-top boxes. A satellite set-top box cannot be used to receive terrestrial transmissions. This means that content has to be developed for each individual delivery platform. It is not possible to re-use the same content on different platforms.

In addition, certain set-top box operating systems are not compatible with the latest version of the HTML standard used for Internet web pages. Also, content formatted for PC viewers is not suitable for display on lower-resolution television screens. This means that it is not possible to re-use web content directly – it must be converted into a form that can be viewed on a set-top box.

The reach of television as a marketing channel is already vast. The television is already a fundamental component of the average household. With the introduction of interactive advertising in Spring 2000, interactive television is starting to provide

the retailer and advertiser with a means of gaining immediate consumer reaction to the visual component of a commercial and the capability of accurately and quickly measuring the impact of a campaign. The interactive component enables the advertiser to respond instantaneously with the appropriate additional information the consumer requires.

The future for interactive TV lies in interactive shopping and advertising – offering consumers what they want when they want it. The retailer will move far closer to their customers, targeting them based on geographic location, viewer profiles and preferences (held on the smartcard, subscriber management systems and Internet based e-commerce sites). News, education, entertainment and restricted web access may well find themselves in supporting roles, rather than being the main attraction.

*"Content providers are going to have to face competition for the limited space set aside by the broadcasters for interactive services."*

<sup>1</sup> DCMS, 1999. Chris Smith sets out Timetable for Digital Revolution: Press Release 245, September 1999. www.culture.gov.uk

<sup>2</sup> Datamonitor, Interactive TV Markets in Europe and the US, 1998 – 2000



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