Digital TV receivers and video terminals: technological evolution and market prospects up to 2007

Idate news n°248 **14 February, 2003**

Integrated digital TV and set-top boxes are currently the prime means for accessing digital programmes even if a range of devices, from DVD players to PDAs, also provide video reception. In the current landscape marked by declining growth, the rate of migration to digital television has been slower than expected. Nevertheless, IDATE forecasts that **by 2007, over 50% of TV viewers will be receiving their programmes digitally.**

IDATE is pleased to announce the latest edition of its study "**Digital TV receivers and video terminals**" which will provide you with an **inventory of the technologies** involved, an in-depth **view of the state of digital,** an understanding of the **players' strategies**, and responses to key questions about the market.

• The impact of technological developments
in-depth analysis of key technological factors, in and around the terminal, for interactive TV and personal TV;

• Players: main strategic paths
the strategies of 19 major players, middleware producers and consumer electronics manufacturers;

• The digital market up to 2007: cable, satellite, terrestrial
a precise view of the integrated digital TV and digital STB market in 9 European countries, in the US and Japan;

• The market's challenges
focus on the latest headline news: declining growth, conditions for widespread adoption of DVB/MHP, developments associated with PVRs and VOD, shifts in financing for set-top boxes…

Evolution of digital terminals

TV and video currently come into subscribers' homes via several terminals, the most common still being the analogue set. TV sets can be combined with a set-top box (STB) that enables reception of digital signals, from either cable or satellite broadcasting, and with a number of image sources, notably a DVD player or game console. The first integrated digital televisions were unveiled in the US in late 1998. TV reception on PC is possible, but remains marginal in terms of revenues generated. The same goes for internet TV, in other words using the TV to browse the web using a dedicated set-top box, or even a special TV set. Lastly, advanced mobile phones and personal digital assistants (PDAs) are also beginning to support video broadcasting, although they are still far from being able to provide quality viewing conditions.

There currently exist a very wide range of set-top boxes:

- **"Free to Air"** (FTA) **set-top boxes**. They have remained marginal up until now, since digital TV has been developed by pay-TV systems.

- Set-top boxes for pay-TV can be divided into three major categories, enabling digital TV reception:

- Low end, enabling only reception of subscription services,
- Mid-range, enabling pay-per-view, electronic programme guide (EPG) and enhanced TV,
- High-end making it possible to incorporate a hard drive, a home network outlet and full interaction (with or without internet access).

The cost of these devices ranges from 100 USD for a low end box, to between 200 and 250 USD for a mid-range and 300 to 600 USD for a high-end STB.

Infotainment devices

They are usually called media centres or entertainment centres or entertainment servers. In addition to the classic features of an STB, they are equipped with a combination of computing and consumer electronics features. Nokia, Matsushita, Samsung, Hewlett Packard, Motorola, Moxi are among the first to produce these new devices which remain confidential, given their cost and the small portion of the population that can afford them.

DVDs have been enjoying overwhelming success since 1999, a success that was further boosted by a drop in prices. By late 2002, they will be present in 40% of American homes, with a worldwide base of some 80 million units. Rewritable DVDs were introduced in Japan in late 1999, and came onto the European and US markets in 2001. The absence of a single standard (there currently exist three: DVD-RAM, DVD-R and DVD+R) could well hamper the market's development. A drop in prices (the first DVD recorders retailing for under 1,000 USD are now available) should nonetheless help trigger growth. In 2005, the deployed base could total 25 million equipped households around the world, with a price tag of under 500 USD. Manufacturers have reached a consensus on a unique standard for a much higher capacity version that can store 4 hours of high definition video, and which is expected to be on the market in 2003.

DVD players' success could have a negative impact on the growth of broadband use, and pose a threat to the pay-per-view, and especially the VOD market.

Game consoles like the PS2 and the X-Box are not content with being increasingly powerful: they are now equipped with or can plug into other equipment, notably a DVD player, a high speed interface and a hard drive. Equipping a game console with a DVD player tends to transform the machine into a multi-purpose entertainment terminal. The advent of broadband makes it possible to imagine game consoles that are at once a DVD player, an MP3 server, a video decoder and a home network server. In September 2002, Sony announced that evolution of its PS2 to a device that manages a home network and TV content. For its part, Microsoft has announced its intention to port its UtimateTV software (used by DirecTV) to its X-Box console, endowing it with the ability to manage a hard drive for recording television programmes.

Integrated digital television set was introduced in 1998. It has enjoyed only mitigated success: sales in the US and the UK have not exceeded several hundred thousand units. Quality image, on the other hand, such as the one offered by DVDs, has enjoyed considerable success: the 2.1 million digital TV sets and monitors sold in the States in 2002 were for the most part equipment without a tuner for receiving terrestrial broadcasts. A major event is the emergence of digital TV sets that are DVB/MHP compatible. The development of this market could be boosted by Free to Air TV operators, since it would allow them to offer interactive services in the same way that pay-TV operators do. Sony was the first to enter this market, unveiling products in Germany and Finland.

Interactive TV sets and set-top boxes: Interactivity software

There currently exist de facto standards for interactive software: in the autumn of 2002, OpenTV was equipping over 27 million STBs and its rival, Canal+ Technologies, 14 million. Longstanding and conflict-ridden attempts to establish standards ultimately led to the withdrawal of the ATVEF consortium, in favour of the standard developed by the DVB (Digital Video Broadcasting): DVB/MHP (Multimedia Home Platform), the norm developed by the ATSC having come too late, and with little hope of imposing itself.

The DVB/MHP offers an adopted standard and available tools. It is true that the norm experienced several setbacks: it was not until September of this year that the series of trials required to obtain the official MHP seal became available. All set-top box producers nevertheless have product ready. By the end of 2002, integrated TV sets will be available from Sony and Philips. Added to this, both OpenTV and Canal+ Technologies have developed programmes for migrating to MHP. The MHP standard had been chosen by a great many countries, including China and India. In the US, Cable Labs officially chose DVB/MHP in November 2001, as the central specification for their OpenCable Application Platform (OCAP) initiative.

Unlike other standards, such as GSM, for instance, the middleware led to standardization works that only began once a large base of proprietary systems was already in existence. Added to this, its goal was to develop interactive applications which have not enjoyed the hoped-for market growth or revenues. Lastly, it requires sizeable investments at a time when many cable, satellite and terrestrial operators' potential customers are experiencing financial troubles, all of which is hindering its development.

Faced with an existing offer, pay-TV operators' reactions have been very reserved. We can summarize the situation by saying that:

- Free to Air TV operators are in favour of it,

- Pay-TV operators are much more reluctant: on the one hand the system of subsidised decoders allows them to control their subscribers and, on the other, their financial difficulties, and level of debt in particular, do not provide incentives for them to renew their decoder base that is currently migrating from analogue to digital,

- Consumer electronics manufacturers, particularly Philips, Sony and Panasonic, have forecast high sales for MHP enabled set-top boxes and TV sets.

This situation has contributed to the financial woes of software developers who have invested massively in MHP software and cannot find buyers.

Under these conditions, we can predict a slow start to MHP's dissemination that will begin with Free to Air TV, the only mode that currently operates in a horizontal market. The long term advantages of the middleware standard are nevertheless expected to triumph, even if it will take several years — in line with the rate of STB renewal. It is realistic to expect that it will be four to five years before MHP-equipped STBs and TV sets become ubiquitous.

Interactivity software producers struggling

The leading systems on the market had long been OpenTV, MediaHighway developed by Canal+ Technologies, PowerTV (Scientific Atlanta) and General Instrument's proprietary system. More recently, Liberate (ex-NCI), and later Microsoft have developed solutions as well. Sun operates indirectly on the market, creating utilities built around Java, while NDS, originally involved in access control, now markets a low cost middleware offer.

The market has undergone considerable struggles, due largely to the slow growth of interactive TV services and to their customers' own financial problems. The sector's two leaders, OpenTV and Canal+ Technologies have not broken even. In the summer of 2002, both were bought out, by Thomson Multimedia and Liberty Media, respectively. Market leader OpenTV, renamed LBIT, in October 2002 announced a restructuring plan that included a 47% cut in its staff.

These difficulties concern those companies who have invested massively in new products and systems that enable interactivity, and whose sales have not reached their target. Access control providers, on the contrary, operate on a much larger market, added to which access control is an indispensable component of pay-TV offers. We have observed that companies operating actively in the area of access control are in the best financial shape, and have even developed initiatives in related fields: Viaccess with France Telecom and NDS with Videoguard (which controls roughly 1/3 of the conditional access market) are all in the black.

Microsoft has not managed to forge itself a stronghold on the middleware for STB market, and appears to be concentrating instead on more targeted utilities including an interactive programme guide, announced in May 2002, and a digital decoder profiling tool. The Microsoft TV division announced layoffs starting in April 2002.

TV set and set-top box producers waiting on the future

STB and digital terminal producers present a variety of profiles. There is very little to be found in common between a company such as Pace, which produces only STBs and rarely targets the consumer market directly, and consumer electronics manufacturers such as Thomson or other manufacturers who are involved in a number of areas, such as Japan's Hitachi and Toshiba, or with manufacturers focused largely on telecommunications, such as Motorola and Nokia. 2001 was a particularly difficult year for a great many players, including Matsushita, Motorola and Philips, who incurred massive losses.

Sagem, Pioneer, Samsung, Sharp and Thomson Multimedia were all in the black, and Sony just barely broke even thanks to the success of its PS2.

The problems being experienced by cable operators, particularly in Europe, have led to a drop in sales of new STBs, especially high-end models, which has triggered a decline in the average price of a set-top box. Lastly, the many issues that digital terrestrial television has faced in most countries have also had a negative impact on sales. Faced with ongoing technological developments, and perpetual progress, a solvent market needs to be found. Both the satellite and cable markets are growing overall, despite periodic difficulties.

In the profile section of this study, we will present the strategies and products of the leading players on the STB and TV set markets: Hitachi, Matsushita, Motorola, Nokia, Pace, Philips, Pioneer, Sagem, Samsung, Scientific Atlanta, Sharp, Sony, Thomson Multimedia.

Market prospects in the US, Japan and Europe: a 7.3 billion USD market in 2002, and forecasts of 14.9 billion USD for 2007

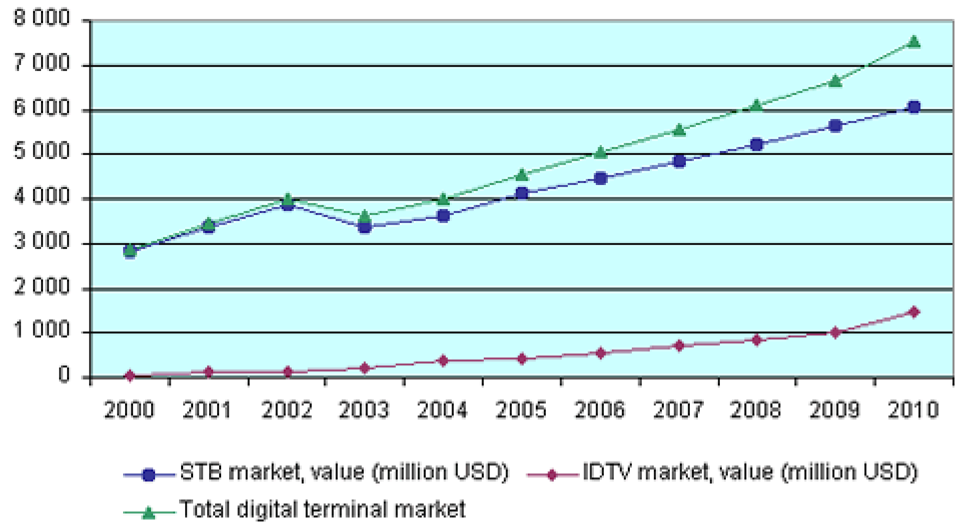
There is a considerable disparity in the state of the various national markets in terms of organization, existing infrastructure and dominant reception modes. We have selected the major markets for analysis.

The United States

The US boasts the world's largest cable market, with over 73 million subscribers. The industry has concentrated itself around a handful of players. Faced with competition from satellite, digitisation is far from complete, but picked up speed in 2001. This digitisation trend has since slowed down (associated with a drive to use less costly STBs), due to a general decline in the players' financial health: massive debts and negative balances.

Satellite is enjoying considerable growth, even if the EchoStar/DirecTV remains uncertain. The development of terrestrial continues, albeit at a slower pace: the vast majority of TV sets that the Consumer Electronics Association considers capable of receiving digital TV are not equipped with a digital tuner, and instead use local video sources, notably DVD players.

Figure 1: Evolution of the digital terminal market in the US

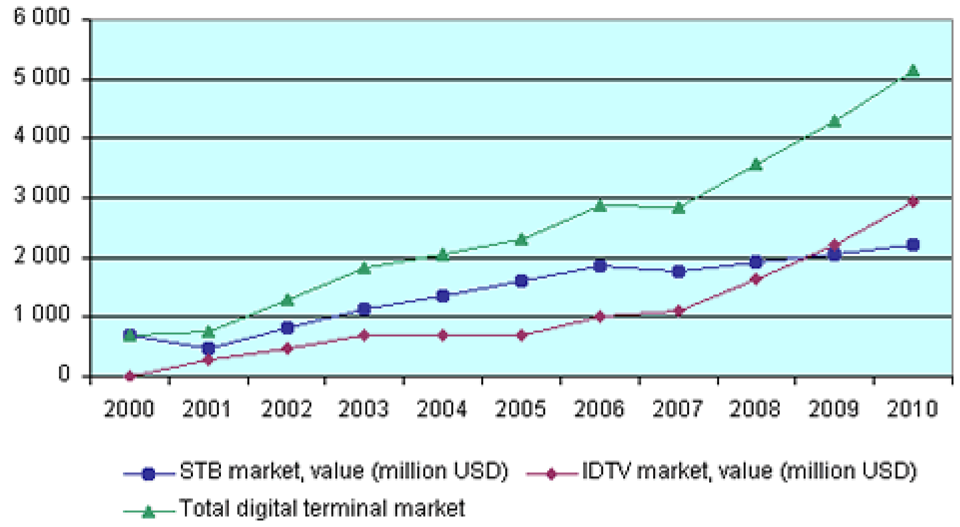


Source : IDATE

Japan

Digitisation of satellite and cable is taking place very rapidly. Cable got off to a late start in Japan, but the sector has been considerably restructured, and marked by the arrival of new heavyweights like Sony and Liberty Media, and an offer that is almost systematically coupled with internet access. Satellite is booming, with the launch of BS in December 2000. The launch of digital terrestrial has been postponed to 2003, with even further delays expected.

Figure 2: Evolution of the digital terminal market in Japan

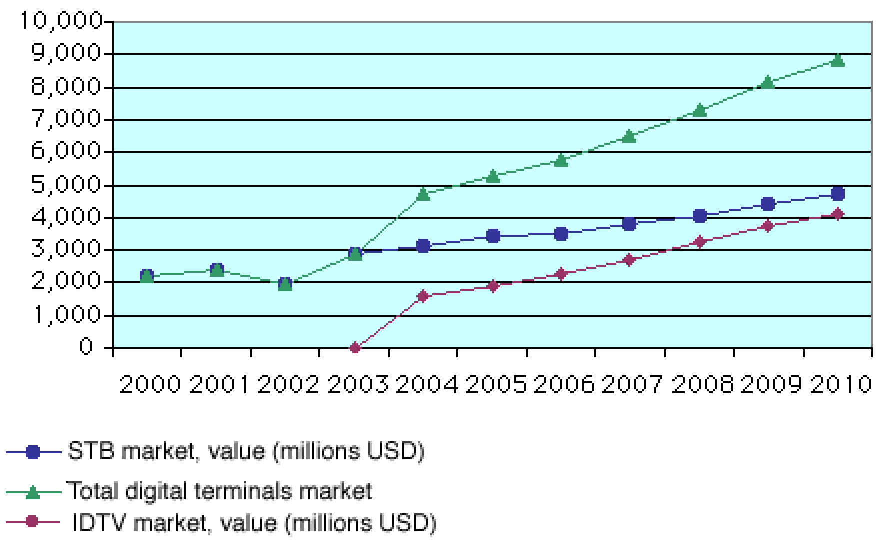


Source : IDATE

Europe

Europe is characterised by a wide diversity of national situations. The UK is still in the lead in terms of digitisation, despite a period of stagnation in 2002.

Figure 3 : Growth of the digital terminal market in Europe



Source : IDATE

Alain Puissochet, Head of studies, Media Economies Department
a.puissocher@idate.fr