

Higher-level teletext in action

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"Level 2.5" teletext offers several important advantages over the current teletext standard (known as level 1.5 teletext). Firstly, level 2.5 teletext incorporates several different character types, and proportional spacing between the characters. Secondly, it provides for improved graphics including acronyms and logos. Thirdly, it incorporates a much better colour palette. It also offers potential enhancements when received on a widescreen (16:9) teletext receiver.

The Author describes here his experiences with the introduction of level 2.5 teletext services in Switzerland (up to the end of January 1998), in particular the problems that have resulted from the software and the equipment manufacturers not following the level 2.5 specification very diligently.

Introduction

The current teletext standard – which is described as *level 1.5* – has been around for over twenty years. It can reproduce the text characters of several different European languages – a feature that was included for the benefit of those broadcasters who would want to provide teletext services in up to three different languages, e.g. in Switzerland.

However, level 1.5 teletext has its limitations:

- ⇒ it utilizes only a single fixed-space character type;
- ⇒ the graphics are very rudimentary;



Level 2.5 teletext screen (Philips) showing a page produced by Swiss TXT on behalf of the satellite channel, 3sat.

⇒ the choice of colours is very restricted.

Some years ago, at the initiative of a number of TV manufacturers, several broadcasters and the EBU began discussions on the possibility of improving the level 1.5 teletext standard. Agreement was reached in record time. A basic requirement of the broadcasters was that compatibility between level 1.5 teletext and the proposed level 2.5 standard should be assured in both directions. This means that reception of level 2.5 services (at least in respect of their basic content) has to be possible on a level 1.5 receiver, and reception of level 1.5 teletext has to be possible on a level 2.5 receiver.

The level 2.5 teletext standard was submitted in 1995 to EACEM for approval, and then to ETSI for conversion into a European standard [1].

Advantages of level 2.5

Until now, teletext has allowed the use of only a single fixed-space character type. Level 2.5 teletext incorporates not only *several character types*, but also *proportional spacing* between characters. This has been made possible by constructing each teletext character from an array of 12 x 10 points, which not only extends the typographical possibilities but also improves the legibility of the text.

Clearly, this improvement also offers greater possibilities in terms of *teletext graphics*. The reproduction of acronyms and logos – an indispensable feature of commercial text-based services – is no longer restricted to simplified and rudimentary reproductions. This has been made possible by means of *Dynamically Redefinable Characters* (DRCs) which, however, are limited to just 24 characters per page. In addition, the editor can specify *objects* – a combination of graphics, logos and colours – which can be superimposed on a traditional teletext page. These objects cannot of course be reproduced by level 1.5 decoders.

Abbreviations

DRC	Dynamically redefinable characters
DVB	Digital Video Broadcasting
EACEM	European Association of Consumer Electronics Manufacturers
EPG	Electronic programme guide
ETSI	European Telecommunication Standards Institute
HTML	Hyper-text markup language
VBI	Vertical blanking interval

The *colour palette* – previously limited to 32 shades in level 1.5 teletext – has been extended to 4,016 different colours. This improvement also offers enhanced legibility by improving the combinations of background colours and text.

In Europe, modern television screens generally no longer have a width/height (aspect) ratio of 4:3. Many of the sets sold today use the widescreen 16:9 format. The blank *side panels* that occur when 4:3 transmissions are received on a 16:9 TV set are generally unused at present for teletext. With level 2.5 teletext, these side panels could be filled with additional explanatory graphics or text (although level 1.5 teletext receivers would not be capable of reproducing this information).

Clearly then, level 2.5 teletext represents a significant improvement in terms of how the service looks on the viewer's television screen. These improvements would, of course, have been



even greater if the broadcasters had not insisted on two-way compatibility between levels 1.5 and 2.5, as this imposed numerous restrictions on the new teletext standard. Consequently, level 2.5 teletext has fewer resources at its disposal than the HTML pages found on the Internet.

The list of enhancements brought about by level 2.5 would be incomplete without including *nexTVView*. This is special software – installed in new TV receivers with a level 2.5 decoder – which offers the user a real EPG. Level 1.5 teletext sets will not recognize this information, since it is based on a format they cannot decode.



NexTVView screen (Sony) showing the on-air service produced by Swiss TXT on the Swiss German-language channel, SF1.

Production difficulties

As a producer of teletext content, Swiss TXT has had some very difficult experiences with the introduction of level 2.5 teletext. The most serious problems have stemmed from the fact that the production software manufacturers have paid only very superficial attention to the specifications of level 2.5 teletext. In addition, the implementation of new level 2.5 functions in existing software has caused major malfunctions at the page-production level.

After a year of testing, it is unfortunately the case that these problems are still not fully resolved. It has not yet been possible to install some of the functions outlined in the level 2.5 specifications. Furthermore, a teletext service composed entirely of side panels is still not possible. Let us hope that these difficulties will soon be overcome.

At an operating level, it should be noted that the possibility of placing objects or colours in a buffer memory – to be able to reproduce them on other pages – is an undisputed advantage. On the other hand, the restriction imposed on the number of DRCs per page, and also per service, is a serious drawback – particularly for pages and/or services which contain advertisements. Lastly, it became clear in the Swiss TXT production studio that it was indispensable to be able to switch quickly between level 1.5 and 2.5 views of a page, in order to have a better appreciation of the result before sending the page to the transmission server.

Level 2.5 receivers

The same comments unfortunately apply here as in the previous section: receiver manufacturers appear not to have read the level 2.5 specifications very diligently. How else can the fact be explained that, depending on the equipment manufacturer, the background colours or graphics of a particular page appear with significant differences?

Another worrying matter is that some receivers – which purport to have a level 2.5 decoder –



provide only level 1.5 functions in practice. The manufacturer concerned seems to be aware of this matter but continues to use this faulty type of decoder.

Although improvements to teletext graphics have been observed by members of the public, these enhancements are seemingly affected by a fault in certain makes of decoder: when teletext is called up, the receiver initially shows level 1.5 information and only switches to the level 2.5 mode after several seconds, adding firstly colours and then objects.

It was only in December 1997 that Swiss TXT received the first questions from viewers regarding level 2.5 teletext. The reasons are simple. Most manufacturers have until recently been unable to supply receivers fitted with level 2.5 teletext decoders. Also, in many cases, there is no mention of the new functions provided by level 2.5 teletext in the user's instruction booklet. Retailers, for their part, have only a very rudimentary knowledge of level 2.5 teletext, or are completely unaware of it.

It would seem that the manufacturing industry has made no effort to spread the word about level 2.5 teletext!

Support from industry

Here we arrive at the key problem which is affecting the introduction of level 2.5 teletext. For many years, the manufacturing and retailing industries have been complaining of falling sales of TV sets. As is well known, an upturn cannot generally be achieved simply by lowering the prices, but requires the introduction of new features which provide the viewer with significant added value.

Level 2.5 teletext – and also *nexTView* which is very closely associated with it – was a strategy for revival, designed by the industry. One positive point during the level 2.5 standardization process was the good collaboration between the broadcasters and the content providers from a very early stage. Unfortunately this excellent co-operation ceased to exist with the end of standardization. The manufacturing industry then proceeded single-handedly to determine the strategy for introducing and launching level 2.5 teletext in the marketplace.

Today, only a few TV sets on the market have the necessary level 2.5 teletext decoders, and the public has still not been properly informed on this matter. Content providers, for their part, are very sceptical about whether it is worth investing large sums of money in a technology which is in danger of never being introduced.

Broadcasting situation

Level 2.5 teletext is currently being broadcast only by ARTE, ARD/ZDF, Bayern 3 and Swiss TXT. The situation regarding *nexTView* is even less encouraging. Apart from some tests in Belgium, France and Holland – it is only Swiss TXT that is broadcasting it regularly on three of its networks in Switzerland, as well as on behalf of TV5 and Euronews. It is to be hoped that two or three other teletext broadcasters will introduce *nexTView* before too long.

Despite this disappointing situation, the reaction of the public is stronger than expected. Swiss TXT has recently started to receive calls from Switzerland and abroad, asking for a list of other broadcasters who are now providing level 2.5 teletext. Interest in this subject seems to



be particularly keen in Germany. This proves indeed that, with better co-ordination and motivation of the teletext providers, and also with better information given to the public regarding this new technology, significant progress could be made with the introduction of level 2.5 teletext services.

Future teletext developments

Our experience with level 2.5 teletext also makes it possible, at least in part, to answer the following question: *where are we going with teletext in an increasingly digital environment?*

As mentioned above, even level 2.5 teletext looks slightly outdated when compared with the HTML protocol used, in particular, on the Internet. An integrated circuit already exists for a computer platform that is capable of carrying an HTML protocol via the television VBI. Such a service has little chance of being developed, however, as there is practically no spare VBI capacity available for it in most existing television services.

The outlook for the development of a level 3.5 teletext – which is two-way compatible with the existing teletext standards (1.5 and 2.5) – looks very bleak indeed: it would probably be rapidly outmoded by the introduction of digital television and data services.

For digital television the situation is a little different. The DVB standards are now being introduced rapidly for economic reasons, firstly on satellite but also on cable. The TV set itself will not change so quickly: in the immediate future, most viewers will buy an add-on DVB receiver to use in conjunction with their existing TV set. Broadcasters who wish, for one reason or another, to change to a digital television service will try firstly to continue with analogue teletext, since current TV sets can only receive this standard. The fully-integrated digital TV set will only become established on the market in the years to come. Priority should therefore be given to ensuring the continuation and development of the existing teletext services!

Lastly, it should be noted that broadcasters and the industry still have one very important task to accomplish. The DVB standards used in Europe for digital television have a data-carrying capacity which has already been standardized. What is lacking, on the other hand, is a comprehensive structure for a data service based on the HTML protocol. The aim of this development is simple: the digital TV set and its remote control unit must be able to manage this data in a clearly defined way. This will require a data decoder which is similar to today's teletext decoder. Only in the



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TELETEXT

United Kingdom – where the introduction of terrestrial digital television is under way – has it been realized that action is urgently needed in this direction.

Let us hope that these UK trials result in a standard – for the transmission of HTML-based text and graphics in parallel with digital TV programmes – that is applicable not just to the UK but to the whole of Europe!

Bibliography

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