A standard for **video**

The guesswork is over — the spec for MPC Level 3 has been released. Panicos Georghiades and Gabriel Jacobs compare notes, try a video grabber board and mark language CD-ROMs.

Shortly after our attempt to guess the specifications of the MPC Level 3 standard (September issue), the figures were released by the MPC Council and the Software Publishers Association (from March of this year the SPA has been handling MPC specs).

MPC Level 3 is in some parts set slightly higher than we expected, but what is obvious is that its main target is to deliver decent video playback. MPEG video, either in software only or with hardware decompression, is now a requirement. This is no doubt one of the reasons why the minimum processor is now set at a Pentium 75.
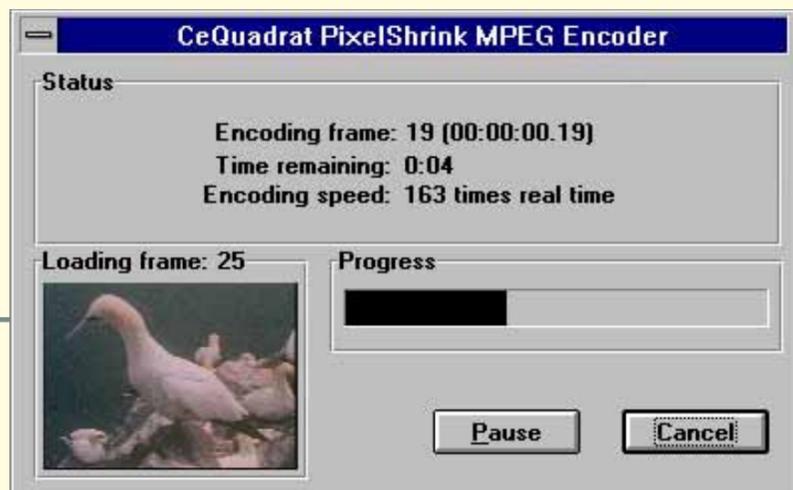
Level 3 also requires wavetable synthesis (pretty much standard now in sound cards) and a quad-speed CD-ROM drive, which is a slightly higher spec than what is presently sold on average.

Hard-disk size has been set at 540Mb (as we predicted) but the transfer rate is specified at 1.5Mb/sec, about double the transfer rate of the hard disks in most machines.

RAM is set to 8Mb, and although some will probably complain that this is too low, note that RAM is one of the few computer parts which have kept their price over the last few years. An additional £250 (to upgrade to 16Mb) is probably not what suppliers would have wanted.

PixelShrink, which is bundled with Crunch It, converts AVI (M-JPEG) files to MPEG-1 White Book standard

If you own a Pentium 60, do you now scrap it because it's not a 75? No. It's important to remember, before you part with any money, that most CD-ROM titles out at the moment are written at Level 2 standard, and a fair amount still require only Level 1. It will take two to three years before there are enough titles written at Level 3 to make your Level 2 machine obsolete. And by that time, the average machine on sale will have surpassed the Level 3 standard in any case.

The current difference between a Level 2 and a Level 3 machine can be several hundred pounds, which would probably be better spent buying 10 to 20 CD-ROM titles. This is especially good advice given that, discounting specific MPEG titles, there aren't that many CD-ROMs out there at the moment incorporating MPEG video.

Of course, the situation could change soon because many large companies are investing a great deal in MPEG technology, which probably means that the standard will be widely accepted. But that won't happen until the prices are right (and some would argue that if this takes too long, a new and better video standard will be out making use of high-density CDs).

Proof of the pudding? The first MPEG1

The crunch for good video

To add to all the talk about video, here's news of a product for producing it which costs as little as products designed only to play it back. Graphics card manufacturer Spea has a new video grabber board called Crunch It. At £325 it not only delivers some of the best quality video capture, but as far as we know is the cheapest of its kind.

If you want very good digital video clips, you have to use very good compression algorithms that will pack as many bytes together in some clever way and still manage to keep the quality high. MPEG provides excellent compression resulting in each picture (frame) being only 5.6Kb.

No Video for Windows method will give you equivalent quality at such compression. So if you want to produce good-quality digital video you have, for practical purposes, two choices. You can either use an expensive bureau service, or you can buy expensive hardware (over £2,000) which provides you with MPEG-1 video compression in real time.

But forget for a moment about real time. If you can do without it (most of us can), compression can be done slowly. This involves digitising the video in your machine with no compression at all at the time of capture, then using some software to do the compression — an overnight job. The only problem is that capturing video with no compression in real time requires a hard-disk transfer rate of about 7.6Mb/sec (for an MPEG-1 frame size of 352 x 288 true colour, slightly larger than quarter-screen VGA), and you'll find it hard to get a hard disk to handle this. You can get disk arrays, but they're expensive. You can also connect a professional VCR to your computer and grab frame by frame, but again such VCRs are expensive and you won't want to wear out the heads.

The answer lies in an in-between solution. You compress as you grab, but use a low-compression ratio — as low as you can get it, just to be able to grab onto a hard disk in real time without losing frames. There are hard disks that claim sustained rates of 3Mb-4Mb/sec (or even higher), but in real life expect to get anything between 1Mb-2Mb/sec. That means you can digitise, at 352 x 288, 25 frames per second at a compression ratio of between about 4:1 and 8:1 for an average hard disk. At up to 8:1 the quality is very good and the files are small enough to be manageable for further editing. Then you can re-convert your final material to MPEG-1 or Cinepak (both end up at over 50:1 compression).

The SPEA Crunch It board uses a Zoran chipset and captures at compression ratios ranging from 5:1 to 120:1. At 5:1 (and even up to 8:1) you'd find it hard to distinguish the original from the recorded signal. Parts of BBC news items are edited at 8:1.

In addition, the Crunch It captures the full PAL resolution of 736 x 576 pixels at 50 fields per second. You can also capture at 736 x 288, 384 x 576 and 384 x 288. It compresses using Motion-JPEG and you can edit the compressed files. With the pack you get a bundled software converter that converts Motion-JPEG files to White Book MPEG standards, and if you have Video for Windows, Premiere or some other editing program you can re-compress them using software-only playback methods.

The board has three video inputs (two composite, one S-Video), one composite output and one S-Video output for playing back video from the hard disk to a TV or VCR. It accepts PAL, Secam and NTSC standards.

VideoCD playback deck has just appeared from Pioneer, at £599. At that price, not many people are expected to be replacing their video recorders this Christmas.

CALL the shots

Whenever a new technology appears, the world of foreign-language teaching jumps out of its skin to take advantage of it. The invention of the printing press soon meant that books on language learning were being churned out by the hundred. Tape recorders and audio cassettes almost immediately generated language laboratories. Personal computers rapidly spawned language-learning software. No surprise, then, that multimedia has followed suit.

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But is it really possible, as language CD-ROM producers would have us believe, to learn a foreign language with only a computer, monitor and speakers? Can we do without a human teacher? On the face of it, the answer seems to be yes, since for the first time we have a technology which encompasses everything you need for learning a foreign language — sound, images, text, interactivity.

Dig a little deeper, however, and the picture isn't quite so rosy. When the language laboratory first appeared in the 1960s, language teachers feared for their jobs — unnecessarily, as things turned out. And their number has certainly not been reduced by the advent of computer-assisted language learning (CALL). The effect of multimedia CALL will be no different, and for a very good reason: lack of computer intelligence.

Multimedia may be able to deliver information better than previous technologies, but it's hampered by the fact that computers can't yet be made to respond intelligently to free-form user input, where the user can type in anything instead of being confined to a limited set of responses. In fact, computers can actually be worse than books and audio cassettes in this respect, since when they try to respond they risk looking foolish, and there's nothing worse than a teacher made to look a fool.

Language learning is especially susceptible to making computers look silly because language is so complex. Of course, voice input is out of the question because we're far from producing a computer powerful enough to understand human language at a level suitable for learning. But free-form typed input, too, poses insurmountable obstacles.

Accent on response

Take this simple but typical case. A user sees a picture of an object and hears the foreign word for it pronounced. He or she is asked to type in the word and misses out an accent over a character. The computer says the response is incorrect. But the response is less incorrect than typing in the word "chair" when the answer should have been "get an ambulance". No CALL package yet written has enough artificial intelligence to cope with that kind of basic distinction, let alone being able to recognise that the phrase "as white as ... goose down" (wrong) is more imaginative than "as white as ... snow" (correct).

Multimedia language-learning CD-ROMs tend to divide into those which offer free-form user input, those which avoid it entirely, and those which mostly avoid it.

Those which avoid it expect only a mouse click or a single key-press. This multiple-choice approach is fine for testing but not so good for teaching. Those which use free-form user input invariably fall into the trap of marking things wrong when they may well be right.

The intermediate approach may include exercises such as having a learner type in prepositions (under, over, on, off...) which are relatively few in number and which therefore give the programmer a chance of having the software recognise common errors. But if the package isn't limited to that kind of exercise, it must in the end opt for one or both of the two basic approaches, each with its inevitable pitfalls.

This doesn't mean that multimedia is no use for language learning. It's an excellent teaching aid, provided the user is aware of its limitations. Such is certainly the case with The Rosetta Stone, featured on this month's cover CD-ROM. This has generally received good reviews. The basic approach is that of listen and choose: you see four pictures and hear something which applies to only one of them. There are plenty of exercises of this kind, with some minor variations and options, ranging from simple beginner's stuff to fairly advanced material.

Parser pitfalls

As such, the approach works fine. But once the user is asked for input, the program falls down like all its equivalents. For instance, in Dictation Mode you hear a sentence and have to type it in. Make one small error (even of punctuation) and you're completely wrong. The parser simply isn't up to understanding your input: it needs a perfect match for an answer to be judged correct.

Nevertheless, the program is a good example of how multimedia can be used

The Rosetta Stone teaches German, English, Spanish, French and Russian. The Personal Edition is bundled on this month's front cover CD-ROM

for language learning: sound, text and images are integrated, and there's a reasonable level of interactivity. This is a big advance on those old DOS-based packages which had you doing drills, and the sound brings the whole thing to life.

This is fine as long as you don't start to believe that multimedia CALL is a panacea, and that human language-teachers should fear for their future. Despite the fact that a good chess program can beat most human chess players, when it comes to artificial intelligence, you only have to consider language CD-ROMs to realise that we still have a very long way to go to create the equivalent of HAL in *2001: A Space Odyssey*.