

damage

How do you go about putting sound on the internet?



If anyone tells you that they are tone deaf do not believe them, it is more a matter of learning to listen. An average adult can hear sound that ranges from 20Hz (cycles per second) through to around 16KHz. So why are so few people putting sound online? To paraphrase Clifford Stoll in *Silicon Snake Oil*: 'In cyberspace you cannot hear a lark sing.' We can enrich the experience of the internet with sound in two ways, using midi or digitised audio. However, along with the rest of the technology

experience, we continue to shoot ourselves in the foot by there being no particular standards, production paths or best practices. Instead we have a plethora of soundcards, formats, plug-ins and different methods of compression. Perhaps the one unifying object of the internet is a need to strike the optimum balance between size and quality, and for this there are many solutions available. An efficient way to get sound onto your web pages is to use midi (Musical Instrument Digital Interface) in some

way. Midi began as a standard for one keyboard to control another and now allows a file to play sounds that are already stored in the computer. Most browsers and systems will only support the playback of midi files and a complex midi file lasting several minutes will be about 15k. Tiny. However midi is not actual sound but data that tells a sound module, in this case usually the soundcard in your computer, what to play. A midi file has the choice of 126 sounds and sound effects in what is known as

limitation

Alex Boyesen, founder of the Flabberghasted Multimedia studio, runs through the options.



Listen to Romeo and Juliet's web site (far left) with Streamworks. MSN digital broadcast Oasis (middle left) live over the net using RealAudio. Philip Glass (left), created by Flabberghasted for MSN using IMA. KoolhaasPro (above) is a powerful and advanced 3D music software tool.

the general midi set. A good soundcard can give good results but a bad soundcard is worse than hearing me sing in the shower. Apart from the differences in the quality of soundcards, the range of sounds can be pretty frustrating – but this is being addressed. Microsoft, with their re-launch of the Microsoft Network (MSN) have utilised midi to probably its fullest extent within the internet environment with the use of their Interactive Music Architecture (IMA). MSN uses a set of soft general midi

sounds stored on the computer's hard disk completely independent of the soundcard, which is used only to output sounds. Recently Flabberghasted Multimedia completed interactive music sites on behalf of Robyn Hitchcock and Philip Glass for MSN in which not only was the music self-generating, but by combining this with background code and ActiveX animation controls we were able to create what is possibly the nearest thing to an interactive music video on the internet. >

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It is also possible to replace some of the general midi sounds with the original samples to give a much bigger range of sounds (ie. Robyn Hitchcock playing a riff on the guitar). This same midi interactivity is used throughout MSN for all their programmes as an effective and efficient way to deliver music.

I was fortunate to spend some time with Brian Eno who showed me a program called KoanMusic, which is another program that allows you to generate music using midi but in a much more organic way. It is reckoned that a 1Kb KoanMusic file on your site will play eight hours of web musik to visitors with the appropriate plug-in. Midi really can work well over the internet.

There are two ways in which digitised sound is used on the internet. Firstly, as a downloadable audio file. Visitors to the site simply select the file they want to hear, download it to their hard disk and then listen to it using a stand alone audio player. Users are unable to listen to the file or do much else until it has fully downloaded, but you can deliver a high quality audio file. The other method of sound delivery on the internet is streaming audio. Streaming means that the first part of the audio file is saved in memory, then played while the rest of the soundfile is simultaneously downloading. Quality and speed will depend on your connection speed, and any kind of streaming (for now, at least) will require a software plug-in.

There are many companies that offer streaming audio for the internet and although there is very little difference in sound quality at 28.8Kbps, what does differ are the costs, interface and perhaps the perceived use of any particular software. Unless you use serverless streaming audio you will need not only a server to display your internet site but a server dedicated to the serving of the audio files. This can prove expensive and, in the case of RealAudio, can incur monthly charges for each of the streams you require - i.e. if you envisage that 100 people will be listening to your sound

simultaneously then you need 100 streams. Despite this, RealAudio is one of the market leaders and have developed a way of embedding users' in soundfiles to take you on a virtual tour around sound sources on the internet.

LiquidAudio is also something to look out for, though it does have a very specific agenda to promote and sell music on the internet. LiquidAudio has

Alex Reyesen relaxing in the Flabberghasted Multimedia recording studio.



'Shockwave audio has to be one of the most versatile ways of getting audio onto the internet.'

an excellent interface which displays artwork, lyrics and information relevant to the music you are listening to - and it sounds better than RealAudio.

Some of the best sounds I've heard have been from AudioActive, who specialise in live broadcasting with a set of plug-and-play boxes, sending analogue signals to a server that then distributes the live audio. Streamworks from Xing is also pretty good and deals well with video.

Shockwave is serverless audio streaming, using one of the now standard plug-ins on the internet. This method is a bargain, it doesn't sound too bad and can be integrated with all sorts of interactivities. Shockwave audio (swa) has to be one of the most versatile ways of getting audio onto the internet. VivoActive is another serverless

streaming tool, but not as flexible as swa. Other audio tools include Internet Audio Publisher and True Speech Audio. And Talker from Rapid Transit allows your web pages to actually talk! Take a look at what Voxware are doing with audio compression and telephony over the net.

Apart from Audioactive the field of broadcasting live audio is also grazed by RealAudio, Xing Streamworks and planned by LiquidAudio. In the next few months Flabberghasted will be sending audio signals from concerts held in London to Scandinavia where it will be encoded, sent to a satellite and then beamed to proxy servers all over the world. World broadcast is here!

Using a local CD-ROM or audio CD which is activated and interacts with a web site is a possible hybrid solution. By going to a web site and interacting you can trigger large, high quality sound and visual assets held on the CD-ROM or audio CD. For instance, Flabberghasted created a web site linked to an audio CD which gave all the background/liner notes on an existing record but when entering the lyrics page you are able to synchronise the lyrics whilst listening to the CD. This is more than Karaoke - the web site had been turbocharged with high quality sound. So we can get great quality sound on the internet. But what's that little black cloud that still remains?

Copyright. How are we going to deal with this? How many of you will be adversely affected by copyright issues in the normal course of your work? How is this problem being addressed? How do you think the record companies feel about distribution of music on the net? And how are we going to keep track of downloads/performances from the net? It's an issue that *Creative Technology* will be covering extensively over the course of the year.