

MPEG-related patents on compression of acoustic data

<http://swpat.ffii.org/pikta/xrani/mpeg/index.en.html>

Workgroup

swpatag@ffii.org

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Acoustic compression requires knowledge of auditive perception, which had to be acquired through experimentation. Thus this field is close to the borderline of technical inventions which could be patentable. Yet most of the research results were published in the 60s and 70s, and the patented processes based thereon are pure informational processes, some of them quite basic and trivial, when viewed against the background of available theoretical knowledge. The whole field of audio compression is cluttered with dozens of basic patents, thus making it very difficult to develop alternatives. Ogg Vorbis seems to have succeeded in developing patent-free audio compression, but is being threatened by the patent holders, who have formed various consortia such as MP3 and MPEG2. In order to develop free software for MP3, one must pay an upfront payment of 1 million USD. Otherwise money must be charged per copy, thus barring the possibility of opensource development. Moreover, recently MPEG-LA, a consortium of MPEG patent holders, also proposed charging fees from content producers.

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*<http://www.ffii.org/~phm>

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1 Relevant Texts

- **Acoustic Data Compression – MP3 Base Patent**¹

Iteratively perform certain calculations on acoustic data until a certain value is reached. The patent owner Karlheinz Brandenburg, core researcher of the MP3 project at Max Planck, received this patent in 1989. This patent and its owner were showcased by the European Commission’s “IPR Helpdesk” project in 2001 as “inventor of the month”. This is one of several dozen patents which cover the MP3 audio compression standard, and perhaps the most famous and basic one. It has always been treated as a model of how “technical” and “non-trivial” software patents can get.

- **(FAQ: MPEG, Patents, and Audio Coding)**²
- **(mp3licensing.com - Home)**³
- **(mp3licensing.com - Patent Portfolio)**⁴
- **(LAME = LAME Ain’t an MP3 Encoder)**⁵
- **(MPEG patent issues)**⁶

¹<http://localhost/swpat/pikta/mupli/ep287578/index.en.html>

²<http://sound.media.mit.edu/~eds/mpeg-patents-faq>

³<http://www.mp3licensing.com/>

⁴<http://www.mp3licensing.com/patents.html>

⁵<http://www.mp3dev.org/mp3/>

⁶<http://news.webnoize.com/item.rs?ID=4155>

- In early 2003, Tord Jansson, developer of a streaming software called BladeEnc, wrote to a member of the European Parliament:

I'm a professional software developer who early summer 1998 wrote a computer program that I decided to put on my homepage. The program turned out to be a tremendous success and was quickly distributed in millions of copies, obviously filling a need among many computer users. I quickly started to improve my program and release new versions. That same autumn I was contacted by a large company with a competing product, who claimed that my program infringed on certain patents they had been granted. Consulting SEPTO gave no reason to take infringement claims seriously since computer programs are not patentable as such, but in early 1999 my legal advisor explained that the legal uncertainty lately introduced by EPO would perhaps make the claims valid. That eventually forced me to stop making my program available.

Do you believe a corporation should have the right to control what computer programs I can write and publish?

- **Thomson ./ Ogg⁷**

Ogg Vorbis is a patent-free opensource alternative written from scratch, achieving high quality while carefully avoiding MP3 patents. Yet how patent claims are interpreted is not always easy to predict. In December 2000, Thomson manager Henri Linde threatens the Ogg project: "We doubt very much that they are not using Fraunhofer and Thomson intellectual property. We think it is likely they are infringing." Some commentators interpret this as a FUD strategy, serving to prevent the Ogg format from gaining ground.

- **BladeEnc⁸**

The author of this free audio encoding sourcecode was threatened by Thomson Multimedia Inc and chose to stop publishing his work, although he wrote nothing but a computer program [as such].

- **The BladeEnc author about Software Patents⁹**

explains why development of audio software is not stimulated but rather stifled by software patents.

⁷<http://news.cnet.com/news/0-1005-200-4101023.html>

⁸<http://bladeenc.mp3.no/>

⁹http://bladeenc.mp3.no/articles/software_patents.html

- **Dolby Standard tolerates no OpenSource implementation¹⁰**

Dolby noise reduction also involves MP3, and developers of free alternatives have been threatened in a similar way, partially based on Fraunhofer patents.

- **Erich Bieramperl: MP3 und Ogg¹¹**

explains that the groundbreaking concepts of MP3 were well known and used in 1980, long before Fraunhofer applied for patents on some of the more mundane details of MP3 programming.

- **Fraunhofer Society as a Bastion of the Patent Movement in Germany¹²**

Mit ihren MP3-Patenten hat die Fraunhofer-Gesellschaft ein Vorbild für relativ anspruchsvolle und zugleich lukrative Softwarepatente geschaffen, durch die der Staat bei der Finanzierung von Forschungsinstituten ein wenig entlastet wird. Dieses Modell ist zwar nicht unproblematisch und auch nicht ohne weiteres beliebig ausweit- und wiederholbar, aber es ist zu einem Erfolgssymbol der Patentbewegung im Hochschulbereich (s. BMBF) geworden. Die Fraunhofer-Gesellschaft betreibt zugleich eine zentrale Patentstelle für die deutschen Hochschulen, die eine ähnliche Pilotfunktion ausübt. Das Fraunhofer-Institut für Innovationsforschung verfasst regelmäßig auf Bestellung des BMBF Gutachten, in denen die unfortschrittliche Methodik der Softwarebranche beklagt und die patentorientierte Fraunhofer-Forschung als Hoffnungsträger dargestellt wird. Ihre Pilotfunktion in der Hochschul-Patentbewegung verleiht den Fraunhofer-Leuten ein starkes Sendungsbewusstsein.

¹⁰<http://localhost/swpat/pikta/xrani/dolby/index.en.html>

¹¹<http://lists.ffii.org/archive/mails/swpat/2001/Aug/0165.html>

¹²<http://localhost/swpat/gasnu/fhg/index.de.html>

2 Fraunhofer Audio Patents

- EP 1149480¹³:** method and device for inserting information into an audio signal, and method and device for detecting information inserted into an audio signal
- EP 1145227¹⁴:** method and device for error concealment in an encoded audio-signal and method and device for decoding an encoded audio signal
- ep1025646¹⁵:** methods and devices for encoding audio signals and methods and devices for decoding a bit stream
- ep1005695¹⁶:** method and device for detecting a transient in a discrete-time audiosignal, and device and method for coding an audiosignal
- ep1123638¹⁷:** system and method for evaluating the quality of multi-channel audiosignals
- ep0978172¹⁸:** method for masking defects in a stream of audio data
- ep0954909¹⁹:** method for coding an audio signal
- ep1133849²⁰:** method and device for generating an encoded user data stream and method and device for decoding such a data stream
- ep1099197²¹:** device for supplying output data in reaction to input data, method for checking authenticity and method for encrypted data transmission
- ep1141890²²:** method for marking a polygon-based binary data set of a three-dimensional model
- ep0978172²³:** method for masking defects in a stream of audio data
- ep0965102²⁴:** output device for digitally stored data on a data carrier
- ep1050186²⁵:** communication network, method for transmitting a signal, network connecting unit and method for adjusting the bit rate of scaled data flow
- ep1052938²⁶:** process and device for obtaining 3d ultrasonic data
- FHG Audio²⁷:** Website of the MP3 researchers from Fraunhofer Institute
- PoStInG - Aktuelles Seminar: MP3²⁸:** Evaluation of MP3 patents by a group of german computer science students.

3 More MPEG related patents coming up

A private mail from 2001/02 tells us:

You are probably already aware of this – some important patents regarding video compression are coming up, particularly relating to MPEG4; I’ve talked to the attorney who is the primary examiner on this patent cluster, and he actually rejected some of them last September (from major multi-nationals) based on over-breadth. It’s wait-and-see. PacketVideo has just gotten an important patent on an error reduction algorithm relating to video compression in low-bandwidth situations that could have been applied very usefully, had it been freely distributed.

One particularly broad and already much discussed patent in this area is at the basis of RealAudio:

US 6,151,634
Audio-on-demand communication system

4 EU IPR Helpdesk Patent Of the Month 2001

A monthly bulletin of the IPR Helpdesk project, financed by the European Commission’s Enterprise Directorate, nominated one of the MP3 patents “European Patent of the Month” in summer 2001:

The Moving Picture Experts Group Audio Layer III compression format, more generally known as MP3, began life in the mid-1980s at the Fraunhofer Institut in Germany.

It is doubtful whether the calculation rule covered by DE3629434 really took a long time to find. Also it is somewhat strange that a 12 year old patent was nominated “patent of the month”. But it seems clear that the MP3 patents are showcased as cases of “good software patents”, since they cover solutions to difficult problems and may involve some empirical knowledge.