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GIF patent to expire, will PNG survive?

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The patent covering a compression algorithm that is responsible for the graphics format GIF will expire this month, leaving the future of rival format PNG in doubt

A patent underlying one of the Web's most popular graphics formats is set to expire later this month, raising the question of whether a rival, open-source format, created as a royalty-free alternative, will become obsolete.

The situation has also rekindled debate about patents, innovation and the freedom of communication.

In the US, the patent for the Lempel-Ziv-Welch, or LZW, compression algorithm expires on 20 June. LZW forms the basis of the popular GIF (Graphics Interchange Format).

LZW patent owner Unisys said it has no plans to apply for an extension to the US patent, or to patents in Canada, Japan, the UK, Germany, France and Italy -- though it will enforce those latter patents for another year, until they too expire. That means the PNG (pronounced "ping"), or Portable Network Graphics, format will soon lose its original reason for being.

"Unisys put the kibosh on using GIF in freeware," said Glenn Randers-Pehrson, editor of the PNG specification and a part-time high-tech munitions engineer at the Lawrence Livermore National

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Laboratory in California. "And that's what PNG was invented for".

But backers said PNG still has a lot to offer. And just last week, the W3C (World Wide Web Consortium) announced its proposed recommendation for the second edition of the PNG format, with a call for public comment through to 23 June.

"The original impetus for designing PNG was indeed because something needed to be done urgently," said Chris Lilley, graphics activity lead for the W3C. "Everyone had been using this format (GIF) and then suddenly we couldn't use it anymore. (But) you always want something a bit better and never get around to it...(and) this provided the impetus -- and PNG is better than GIF."

Whatever PNG's technical and intellectual-property advantages, it has never approached GIF in terms of adoption and remains a marginal presence among image formats on the Web.

Lilley conceded that PNG is not for everything. Photographs are better saved as JPEG, or Joint Photographic Experts Group, files, and GIF offers animation capabilities that PNG was not designed to provide -- though a sister specification to PNG called MNG ("ming," or Multiple-Image Network Graphics) does support animation.

Still, PNG has won a following among open-source developers, freeware providers and organisations, including some government bodies, that balk at the licensing terms attached to GIF implementations.

From "free" to fee

PNG was born just as the Web underwent its commercial transformation and technology companies began exerting their intellectual-property rights in earnest. Unisys, a corporate services and software company announced in December 1994 that it would begin collecting royalties on its patent for the compression algorithm underlying GIF (and it redoubled its patent enforcement as the expiration date neared). Prior to the '94 announcement, the patent had gone unenforced since 1985.

The advent of licensing fees for software to create GIF images presented little problem for established companies like Adobe Systems, which supports the format in applications including its omnipresent and expensive Photoshop image-editing software.

But for individuals supplying free software, the fees were prohibitive.

The W3C published its first PNG recommendation in October 1996. The International Organisation for Standardisation (ISO) began work on its own ratification of the format two years later.

Should the W3C and ISO both ratify the current drafts of the second edition, it will become available free of charge from the W3C under an exceptional agreement hammered out between the two standards groups. ISO normally charges for access to its publications.

At ISO, the PNG format last month reached its "60.00 status," the penultimate stage in the ISO process. At ISO the document is titled "ISO/IEC 15948."

Although PNG has remained comparatively stable technically, the second edition introduces support for Unicode, which lets the specification render characters in non-Roman alphabets. That helps it meet international requirements promulgated by ISO.

Backers of the image format sought an ISO-issued edition after some developers complained that they couldn't use it for government contracts without one.

Impatient with patents

Improvements aside, some view the issue through a more ideological lens. And seen that way, the continued existence of PNG can take on a symbolic dimension.

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One open-source and antipatent activist urged the adoption of PNG specifically, but more generally nonpatented technologies.

"The big issue is not whether you use GIF or PNG," said Don Marti, president of the Silicon Valley Linux Users Group and Webmaster of Burn All GIFs Web site. "The big issue is whether you let a patent holder become a censor for your communications."

Conflict over patents has roiled standards organisations, with the W3C recently repudiating the use of patented technologies in its recommendations, and the Internet Engineering Task Force (IETF) reserving the right to implement them.

Marti, who in 1999 organised a "Burn All GIFs Day" protest against Unisys, compared the enforcement of software patents on communications software to the Stamp Act. That act, passed in 1765 by the British Parliament, imposed a tax on paper and other writing materials used in the American colonies and was an impetus for the revolution.

"A patent on communications, or on a format or a standard for communicating, is just like a stamp act," said Marti. "As soon as you decide to use a patented format to communicate, you give the patent holder a dangerous level of power over you."

But Unisys credited its exertion of the LZW patent with the creation of the PNG format, and whatever improvements the newer technology brought to bear.

"We haven't evaluated the new recommendation for PNG, and it remains to be seen whether the new version will have an effect on the use of GIF images," said Unisys representative Kristine Grow. "If so, the patent situation will have achieved its purpose, which is to advance technological innovation. So we applaud that."

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