

The Visual Creators' Index

(VCI-UK)

White Paper

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The Visual Creators' Index

The Visual Creators' Index Ltd, or VCI, is an independent and not-for-profit Index of 'visual creators' run on behalf of, and for the benefit of, all creators of visual images. The VCI management committee is composed of representatives from primary UK organisations of visual creators.

The main function of the VCI is to promote and protect the rights of the creators of visual images in a digital environment. In immediate practical terms, the VCI will investigate and recommend methods of marking digital images, and will set up a Register to provide and assign a standard Creator Code, uniquely identifying an image creator, for use with these systems.

Although the primary purpose of this Creator Code will be for use with currently available software, which are able to insert the Code into digital images at a sub-visual level, it will also benefit those image-makers who do not currently use digital capture, transmission or archiving, as registration on the Index is also open to them, and their Creator Code can be used to identify artwork, prints, transparencies and even computer and photographic equipment.

Any Code can be instantly linked back to the individual creator through a constantly updated index, the VCI Register, which will be available directly via the World-Wide Web, or by phone or fax through the member organisations of the management committee.

As well as helping to protect copyright by allowing the identification of the creator of an image in the digital domain, the VCI scheme will also overcome the problem of maintaining contact with image-makers as they move base during their working lives.

The VCI has thus begun the process of setting a universal standard format for creator IDs, which image makers throughout the world, as well as manufacturers of computer hardware and software, especially other fingerprinting and watermarking software, can now begin to support.

28 April, 1999

WHY WE NEED A VISUAL CREATORS' INDEX

A Personal View by Mike Laye, Chair, VCI

When I started as a photographer, I remember being told by the old boys: "Never give up your negs. laddy, and always put your name on your prints". Good advice, except I never worked out what to do when four-colour printing got cheaper and transparencies came in - there were no negs. and nowhere to write your name either. I used to stick a label on the mount, but it wouldn't last long. We had a problem then, but we couldn't find a good solution.

Times have changed and the digital revolution has finally hit image makers. Of course, the conversion of images into digital data has been happening in our industry for a good few years, although it used to happen way downstream, probably at "the printers", but now the conversion into a digital format is happening very much closer to, if not at the time of, the creation of the image. The great bonus benefit is that, unlike an analogue copying process, where generational degradation very soon destroys any quality in the image, a piece of digital information can be copied and copied and copied, with each copy having exactly the same quality profile as the first.

Precisely because it is so easy to make a copy, and because there is no loss, people think nothing of turning out copies for all sorts of reasons. Once those copies are made they can roam freely in the world, being copied and copied again if needs be. How can they ever be controlled, identified, catalogued?

This ease of digital copying demands a solution, and one has now emerged: digital "fingerprinting" or "watermarking" is a method of encoding information about the creator of the image, or the owner of the copyright, not onto a label or even into the structure of the digital file, but actually into the image itself. Nothing to come off, and the information, being part of the image, travels with it through every copy, whether the copier is aware of it or not. Because the information is buried in the image it should survive any amount of copying and it should also survive a good deal of manipulation such as cropping, colour changing, blurring and sharpening. In particular, it should survive the transformation into litho print, and be decipherable even if only a small part of the original image is used.

Of course, a fingerprint or watermark in itself can not prevent unauthorised use of the image, although it can be a forensic aid in proving theft. It must also be said that marking images in this way is probably more to do with helping the "good guy" than it is to do with stopping the bad guy. Luckily, there are many more good guys who want to identify you, than there are bad guys who want to rip you off.

What information can you put into the fingerprint/watermark? Well, this is the tricky bit. It has to be some kind of a code number, because if you tried to write your name and phone number, fax and agent into the image, the changes caused to the image would be too noticeable. And remember, the mark is not removable once it has been applied, and you don't want to have out-of-date information locked in. This means that it has to be some kind of a reference number that links to a central store of easily updated information about creators and copyright holders. We at the VCI believe that

this database should be run as a world-wide not-for-profit resource, a standard to which individual software products can relate, and around which they can compete. For obvious reasons, we do not want to see competing software products spawning competing creator registers

In practice how this would work is that each visual image-maker working in a particular country would be given a unique ID number on a "Visual Creator's Index" that they could use throughout their everyday work for physically or digitally marking prints, transparencies and digital files. Anybody needing to identify or contact them could then use the ID number to consult the Index, either directly on the World Wide Web on the Internet, or by phone. There they could obtain up-to-date details as specified by the individual concerned - this could be a phone number, agents' number, an address, whatever.

The benefits that can flow on from this system are many: insurance companies are interested in the fact that it could be used to invisibly mark professional equipment, suppliers and labs could use it as account references, libraries are interested in using it to identify their photographers, and there are probably many more ideas to come.

Now we must prepare for the future: Such is the world-wide demand for good images that it is becoming a big business, and most of that business will be done electronically. The potential for image makers to profit from this boom is great, but the absolute bottom line is that in this gee-whiz, super-speed, electronic marketplace the creator **must** be instantly identifiable, otherwise their rights (and their economic survival) could get trampled in the rush.

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There are a number of fingerprinting/watermarking systems currently available on the market. The two best known, and the most focussed on the individual image maker, both come in the form of "plug-ins" for Adobe Photoshop:

PictureMarc from the Digimarc Corporation of America comes already installed in Adobe Photoshop 4 and 5 as well as other applications from Adobe and others. The individual user program is completely free, and although Digimarc had originally set up their own register as a main source of revenue, quoting an annual charge for registration of \$150, in recent weeks they appear to have made their "Basic ID" free as well, while charging \$500 for an enhanced "Smart ID". Batch processing software is available for those managing archives of images.

Digimarc: E-mail: info@digimarc.com / Web site: <http://www.digimarc.com>

SureSign from Signum Technologies Ltd, a UK company, charges £95 for the software, plus £148.50 annual licence fee. Signum also have "Pro" products which are aimed at picture libraries and others who are wanting to batch mark a large number of images.

Signum Technologies Ltd: Phone: +44 (0)1993 776929 / E-mail: signum@signumtech.com / Web site: <http://www.signumtech.com>

THE VCI SCHEME

The VCI UK is a non-profit making company run by, and for the benefit of, the creators of visual images, who have come together to protect their work from unauthorised use, principally in the new and rapidly developing digital media.

The following is a brief summary of the main points of the VCI scheme, which are then explained in more detail:

- 1 The creators of visual images need digital labels to identify their work in digital media. These labels should be in the form of digital "invisible ink" on the image itself.**

- 2 The label should**
 - a) survive repeated copying**

 - b) survive translation into and between other media**

 - c) be accessible from even a fragment of the whole image**

 - d) survive cropping, manipulation and re-combination of images**

 - e) be secure, not easily removable**

 - f) not compromise the image quality**

- 3 The label should identify the creator of the visual image**

- 4 The identifier should be unique to an individual creator**

- 5 The identifier needs to be a code because**
 - a) it will reduce the impact on image quality**

 - b) it will avoid locking out-dated or inappropriate information into an image**

 - c) a label that cannot be "updated" is more secure**

- 6 Creators should be identified through an easily accessible public database, an index of creators and their unique labelling codes**

- 7 This database should be run by and for the benefit of the creators**
- 8 There should be one world-wide standard for the format of the identifier code, to allow for a future world-wide database**
- 9 A practical identification scheme should be available now for use by creators in the UK**
- 10 This should be supported with a technical forum to ensure partnership and co-operation between software suppliers & users**
- 11 The VCI-UK, with over 1200 creators of visual images already registered, is supported by The Association of Photographers (AoP), The Association of Illustrators (AoI), The Designers' and Artists' Copyright Society (DACS) and the National Union of Journalists (NUJ). It has begun the process of achieving the above aims, and is a first step towards a world-wide standard for identifying visual creators**

THE VCI IN DETAIL

1 - Digital labels

The digital equivalent of printed labels is necessary if for no other reason than because much digital reproduction of copyright material no longer takes any kind of "physical" form. There is nothing to stick a conventional label onto. Digital labels are particularly valuable because they are the only way of embedding information in the image itself, without destroying it for reproduction purposes. Labels that are simply attached externally to a digital file can easily be removed. Software is now available that uses digital "invisible ink" to put information into a picture, a "fingerprint", and can also be used to detect it and make it visible when required.

2 - The technical requirements

It is essential that fingerprints are robust enough to survive repeated copying. This is already the case with commercially available software.

They should also survive translation into and between other media. For instance, a fingerprint should be detectable from an image of digital origin when it appears on the printed page, and *vice versa*. Again, this is already the case, but the technology is not 100% reliable in this respect, although improving all the time.

Fingerprints should also be accessible from a small fragment of the whole image. This is already possible, because, in current technology, the fingerprint is in the form of a pattern, repeating throughout the image. For this reason they are also capable of withstanding a degree of manipulation, as well as re-combination into montages.

Fingerprints should not be easily removable - this, after all, is the whole point of using them rather than externally attached labels. Absolute security may not be possible, because as fast as software developers improve fingerprints, others can work at improved methods of removing them. It can however be said that digital fingerprints are at least as secure as the existing methods of labelling conventional images, and if not proof against highly sophisticated copyright thieves, are a practical and reliable means of identification for all normal business purposes.

Lastly, fingerprints should not compromise the image quality. With the available software and on reasonably medium resolution images, they don't - provided they only carry limited information (*see 5 - Identification Code, below*).

3 - Identifying the creator

The single most important piece of information to be conveyed in a fingerprint is the identity of the creator. Why the creator? Firstly, because that is the one identifier which can be guaranteed to remain constant; whereas publishers, agents, libraries and even owners of copyright can, and do, change or go out of business. Secondly because creators are usually the owners of copyright, and always the owners of moral rights

(which cannot be assigned). Thirdly because as a matter of principle we consider it important that the creator should retain primacy as the first point of reference for his/her creative work.

The identity of the creator is, therefore, the best place to start. At present other information can be attached in a caption file, and the VCI index itself will be capable of carrying up-to-date information on a creator's rights administrators. In the future these problems will be resolved as technical developments allow multiple labels to be applied to an image; but even then, and certainly today, the most important person to identify is the creator.

4 - The creator's unique identifier

To avoid confusion, it is essential to use a unique fingerprint for each creator, that belongs to the creator for life, and cannot be withdrawn or given to another (*see 7 - Creators in control, below*)

5 - Identification Code

This unique fingerprint should take the form of code, not an individual's name and contact details. This is partly because, given the present state of fingerprinting technology, using more than about a dozen alphanumeric symbols will degrade the image, but using such details is undesirable anyway, for the simple reason that they can and do change, rendering the fingerprint incapable of finally identifying the creator. Looking from the security point of view, any software that allows the creator to change information in a fingerprint after it has been embedded in an image would also make it easier for others to do the same.

6 - Index of Creators

It follows from this that there must be an index of creators and their unique labelling codes, which is constantly updated, and easily accessible to the public, whether on paper, on the end of a telephone line, or on a Web-site, or by a combination of methods.

7 - Creators in control

This index should be run by and for the benefit of creators. It should be clear that the creators need to be in control of their own identifiers. The alternative is to leave it to commercial interests, and there are many dangers in that solution: The obvious one being that a commercial index would inevitably be seen as a potential source of profit, leaving creators exposed and vulnerable to rising charges for remaining in contact with clients or potential users of their work.

Another danger is that the unique identifiers would be under the control of those with commercial interests at heart, rather than those of the creator, and so could be withdrawn for non-payment, or even transferred to another creator. We ask, how would a commercial index handle dead artists, or those, still living, who can no longer afford the registration fees?

Finally, one thing that the computer industry has learnt the hard way is the necessity for open standards to allow portability of data. In this case, only a global, standardised index sitting above commercial interests can prevent the software companies from devising and using their own proprietary and incompatible standards for labelling. Only a not-for-profit index in the hands of the creators can both protect the creators' ownership of their own fingerprint identifiers, and also provide one common labelling standard for fingerprint software manufacturers to use.

8 - One World-wide standard

An initial simple labelling code that can be practically used today should be to a common standard useable world wide, and also compatible with the more sophisticated code that will become possible as technology advances. The standard we are proposing as an interim measure is a six digit code, in the following sequence: first, two numbers followed by a hyphen (dash), then two letters followed by one further hyphen (dash) then two further numbers.

00-AA-00

The first two numbers can be used to indicate a geographical area covered by a particular index of creators. For instance, the VCI UK is proposing to use the UK international dialling code, 44, as the prefix to all its creator codes. Individual creators then have a unique alphanumeric combination of two letters, followed by two numbers, as their own identifying label. This gives a total of 26 x 26 x 99, or 66,924 possible unique labels for UK visual creators - more than enough until the interim standard is further developed with later generations of software.

Existing software already allows the use of several more digits. These can be used, for instance, to allow creators to identify individual pictures, according to their own cataloguing systems.

Simply put, any image whose label begins in the form 44-AA-11 will be immediately identifiable as the work of a creator on the VCI-UK index, which will then provide potential users with contact details for the creator (or their appointed representative).

9 - Launching a UK scheme today

The code formula adopted by the VCI allows for other databases of creators to be developed in other parts of the world to a common standard now. It allows for future advances in both software and code to improve creators' index schemes, without invalidating the fingerprints of today designed according to this formula.

We cannot wait for international agreements before going ahead. The potential for copyright abuse through digital reproduction is already here, and increasing daily. Software developers are producing rival proprietary schemes which will make it increasingly difficult to establish any kind of standard. If both creators and users of copyright pictures are to have an identification scheme we can all understand, it has to be started now, by the first organisation prepared to plan with future harmonisation in mind.

10 - Technical Forum

Such a scheme cannot work without the support and co-operation of the software companies. There need not be any conflict of interest here - the VCI will be providing a level playing field for software companies to provide competing products to visual creators. In fact, the establishment of the VCI will make things easier for new players in the market, as they will be able to tap into an already established resource of a World-wide register of Creator Codes.

The VCI is establishing a Technical Forum for software (and hardware) manufacturers supporting the VCI standard, to discuss common interests, and ensure the continuing development of the VCI scheme.

11 - The VCI-UK

The Visual Creators Index Ltd. has now been launched.

It is an independent and not-for-profit organisation run on behalf of, and for the benefit of, all creators of visual images. The VCI management committee is composed of representatives from primary UK organisations of visual creators. These are currently **The Association of Photographers (AoP)**, **The Association of Illustrators (AoI)**, **The Designers and Artists Copyright Society (DACs)** and the **National Union of Journalists (NUJ)**. The door is open for others to join.

The VCI-UK will be funded by an annual, minimal, maintenance fee for the holding of individual creator's contact details on its database.

The main function of the VCI is to promote and protect the rights of the creators of visual images in a digital environment. The VCI will investigate and recommend methods of marking digital images, and will set up a Register to provide and assign a standard Creator Code, uniquely identifying an image creator. However, it will also benefit those image-makers who do not currently use digital images, as registration on the Index is also open to them, and their Creator Code can be used to identify artwork, prints, transparencies and even computer and photographic equipment.

The VCI has already registered over 1200 creators of visual images. Their Codes can be instantly traced back to the creator through a constantly updated index, available via the World-wide Web, or by phone or fax through the member organisations of the management committee. The VCI has thus begun the process of setting a universal standard format for creator IDs, which image makers throughout the world, as well as manufacturers of computer hardware and software, especially other fingerprinting and watermarking software, can now begin to support.

The Visual Creators' Index requests support for this major initiative from all those involved in the creation, distribution, management and reproduction of visual images.