Simplicity meets complexity at Intergraf

Payne Security launches its new range of Integra solutions for protecting passports and ID documents at Intergraf's XIth International Security Printers' Exhibition, under the theme of 'simple complex' technology. From the new IntegraSF thin holographic film, for the protection of passport bio-pages, to a new range of IntegraiD high durability identification cards; Payne Security offers a range of authentication and protection solutions for security documents.

The launch of the Integra range follows an extensive eighteen month consultation period with customers and suppliers, during which Payne Security has responded to demands for unique document authentication solutions that offer maximum flexibility and responsiveness in usage but also consistently secure results.

"The thrust of 'simple complex' is to high-light customer requirements for ease and simplicity in terms of use of the Integra range, and the need for complexity when it comes to the security aspects. This is achieved using sophisticated product assembly and printing techniques that are virtually impossible to copy or duplicate," comments Stephen Pinchen, Payne Security's Business Development Director.

Payne Security's new range of IntegraiD cards and card components is available using a choice of highly durable substrates with an extended life span, that can be combined with the company's portfolio of security technologies to provide unique, tailored solutions for a variety of ID card applications. Options include an all PET (Polyester) card, Polycarbonate and a synthetic core structure that can be integrated with contact, contactless or dual interface chip technologies depending on the card application.

In addition, Payne Security will be bringing its machine readable taggant solution to Intergraf. Demonstrations of the technology – which provides authentication for a range of security applications and products such as tax stamps and passports – will be available by appointment.

"This is only the start of our aspiration to develop a business that delivers a stream of value-adding innovative products and services. Intergraf's XIth International Security Printers' Exhibition represents the ideal arena in which to state our ambitions," adds Stephen Pinchen.

Using **DNA** techniques for document and product security

Security features usually add something to a given document or product. But each item has intrinsic structures on a microscopic level that are unique. Would such intrinsic characteristics of documents and objects be enough to fully track and trace them and to identify genuine items from counterfeit ones? Perhaps, but it is unwise to rely on one security feature only. A new system by AlpVision proposes that it is safest to use a combination of technologies.

DNA is routinely used in forensic examinations to identify humans, but apart from for human beings, DNA patterns are today also used to identify any organism, living or having lived on earth, except clones or twins. Progress in technology has made DNA analysis quicker and easier and databases are now capable of identifying individual DNA with a great reliability amongst millions of DNA patterns.

What about applying this technique to inert objects such as printed documents or goods? Theoretically the current data storage industry is capable of memorizing millions of billions of information elements and retrieving them using huge data processing systems. The Internet search engines are good examples of this capability, needing only a couple of seconds to find a chain of symbols or alphabetic letters amongst billions of electronic pages. Does this mean that the current document protection techniques based on invisible markings with normal ink or special ink, security taggants or microstructures are rapidly becoming obsolescent? Certainly not. On the other hand, it is certain that there will be security applications where DNA-like techniques will apply, but which are they?

AlpVision released recently a proprietary DNA-like solution under the name Fingerprint, (on which Infosecura reported in No. 29) using normal light and standard electronic appliances, such as digital cameras, webcams or flatbed scanners to record an image of intrinsic characteristics of a printed document or a solid object. With a proprietary mathematical algorithm, AlpVision processes the image and saves the result into a secure server. Using advanced data processing, the image of a document or an object to be identified is compared with the genuine imprints saved in the server. The verdict "genuine" or "fake" is given after a few seconds.

Such a solution is for example, very interesting for the watch making industry because it does not need any add-ons or modification of the manufacturing process. The number of quality watches produced annually is also in line with the cost of a systematic storage of an image of each important manufactured part. However, to apply such a technique to the mass production of printed documents or of packaging, with billions of items per year, is a very different matter.

Therefore, to take the theoretical or pure scientific approach and assume that DNA like techniques will supersede all the others and confront that with the reality, in particular taking into account the number of documents or objects to protect, the cost of maintaining a data base considering the way documents or products are changing hands during their usage or along the supply chain, one can conclude that other covert or overt security solutions have still a lot going for them for many decades.

Share the risks

As for many successful document or brand protection solutions, a combination of various and evolving techniques will provide the highest level of security for a given cost, which is still affordable for the document issuer or the branded product manufacturer. Other criteria such as the resistance to photocopying or the possibility to identify a part of a document

when the rest has been destroyed, are other factors that demonstrate that a combination of visible and invisible marking would be the only efficient solution.

The AlpVision answer was to create an Intranet / Internet server-based authentication open platform called Krypsos, which combines various security techniques such as Cryptoglyph, the AlpVision covert proprietary security marking with normal visible ink and Fingerprint, the read only DNA like solution. It is possible to add the recognition of third party visible marking such as bar codes, two dimensional matrix codes or even OCR text or printed microstructures.

The Krypsos solution uses only standard electronic equipment such as a flatbed scanner, digital camera, webcam or camera phone to enter the characteristics of products and then detect the genuine ones from fakes.

Sophisticated imaging software analyzes an image of the product and returns a "genuine" or "fake" verdict in seconds from anywhere in the world. Other helpful information can be collected as well. The Krypsos solution enables brand owners to provide their supply chain with a single point of contact for both fraud detection and genuine product authentication. It also provides valuable logistics data, such as gray market consolidation, and can generate helpful electronic notifications for mobile commerce.

Cryptoglyph, the constituent part of Krypsos, consists of printing invisible micro-dots over the entire surface of the primary or secondary packaging, or an entire document. As these dots are invisible and spread on the entire surface of the packaging or the document, it is impossible to replicate or to erase them. These invisible micro-points contain encrypted information, which can only be deciphered by using a 128 bit encryption key.

These micro-points are integrated into the package design before printing and are invisible to the naked eye. They are very difficult to distinguish - even under magnification - as the dots are hidden in the imperfections found in all printed material and thus completely camouflaged. The same technology is applied for both document and brand protection, as both use identical industrial printing processes.

This camouflage feature, using the imperfections of the printed material, is one of the unique aspects of AlpVision Cryptoglyph technology. The detection software is based on advanced signal detection capabilities that have very low signal-to-noise ratios and built-in conceptual redundancies.

Fingerprint, the second part of the Krypsos system registers unique, microscopic differences generated by the manufacturing process and the raw material used. Sophisticated image processing software identifies these unique characteristics of the image due to intrinsic differences even though objects are produced in series. Fingerprint is a Read Only solution which simply relies on the object "as is". There is nothing to be counterfeited.

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