

Optical Document Security & Electronic Certificate of Origin

The fight against fraud and counterfeiting requires new tools to ensure document security, says James Oon, General Manager of RadianTrust. Interview: James Smith.

The growing problem of worldwide counterfeit trade documents has challenged governments by increasing business risk and administrative costs.

"We noticed that a fair bit of trade documents, medical certificates, permits and diplomas, are still a target of fraud," explains James Oon, General Manager of RadianTrust. "So we looked at how our technology could give users the ability to verify that the document is true and whether any data has been modified."

RadianTrust, a subsidiary of CrimsonLogic, is an end-to-end IT security service provider that provides secure business environments for businesses and governments through proven IT security offerings and best-of-breed intellectual property. The company's areas of specialisation include government, healthcare, legal, trade and logistics sectors. RadianTrust's IT security services and solutions range from information security, security information management, application security to Public Key Infrastructure (PKI), through a team of certified engineers with extensive experience.

Building trust

Because RadianTrust enables the printing of watermarked documents through regular laser printers, allowing end users to print secure documents themselves, Optical Document Security has proven to be a cost-effective solution, says Oon. Besides enabling quick visual document authentication and rais-



James Oon, General Manager of RadianTrust

ing the barrier against fraudulent modification of content, it also provides a high deterrence against unauthorised reproduction.

"We started the project with this optical watermarking feature in 2002, and at that point in time we patented the technology, which uses a normal laser printer to change the greyscale within the watermarking on the paper itself," explains Oon. "When people make a copy of the document, the watermark on the paper disappears in the copied version."

In 2004 RadianTrust started the second phase of its product development, funded by Infocomm Development Authority of Singapore as part of its Intellectual Property enhancement scheme.

"This time we put in an additional anti-forgery feature, where take all the important pieces of information in the document, encrypt it using PKI, and sign the data," he explains. "In a typical barcode what happens is you put in normal readable data. So when you read it

with a scanner you see normal characters, part of the product barcode. But with 2D barcode you can put up to 4k of data, and as a result of that we thought we could put whole content of document into the barcode. So we decided then to secure the barcode, so that part of the securing involves signing the data and securing the data. Changing the data in the document becomes very hard, because you don't have the key to change the data."

Alongside the optical watermarking and 2D barcode, RadianTrust combined a further innovation - 'transactional microprinting'. This is the use of very small characters to validate a document, such as you can find on stamps and currency:

"The combination of all three of these technologies strengthens the anti-counterfeiting and anti-forgery characteristics of the documents," Oon notes. "A good example of this is how we apply it to a web-based Certificate of Origin."

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Document provenance

A 'Certificate of Origin' is a mandatory requirement in certain countries when you want to export goods, serving to confirm where the goods were originally manufactured. RadianTrust were responsible for supplying the Optical Document Security features of a new web-enabled Certificate of Origin system in Singapore.

The original requirements for the CertOfOrigin were that it needed to allow online submission; that this needed to be secure and not repudiable; that traders would receive timely communications to alert them to the status of their applications; that the system would allow for self-printing at the office of the trader; and that the resulting certificate needed to be tamper resistant. And of course all of the above should cost less than the existing system.

"When the requirements came up, one of the things we saw with the original process was that there was a lot of repetitive things that traders had to do," observes Oon. "Filling up the documents took traders a lot of time, because they had to go to a certifying authority to get a seal of approval, and then take that document to the Customs Office."

The direct cost of the document was S\$12 (US\$7.4), which is expensive enough when you are having to file dozens of applications for COs at a time. By the time you factor in the labour and transport costs required to ferry documentation between pillar and post, the overall

cost was between S\$80-S\$122 (US\$50-US\$75) per document. Clearly here was an opportunity to apply technology to make the process more effective and efficient.

"In Singapore there are a lot of supplementary documents that have to be scanned and sent to the four participating chambers of commerce," Oon explains. "Traders are required to sign each document, and so they use an USB token containing their digital certificates, which means that legally they undertake that whatever is submitted is correct, and that they are accountable for inaccurate documentation. Following submission of their documents to one of the chambers of commerce, and on digitally-certified approval by that chamber, the cham-

ber official is then required to countersign these documents, again with a USB token."

Once the documents have been approved, and the traders alerted, they can log on to the system and then print out a certified document.

With no need for special secure stationery or customer service counters, the cost of the process was dramatically reduced, and these savings were able to be passed to the end-users.

"With that print out, the transaction cost has fallen to as low as S\$8 (US\$5)," he claims. "But really you are promoting self service, so the major saving is not having to travel. We worked out that the net savings were 65 per cent of the original cost."

Going regional

The CertOfOrigin has now been used by 14 countries round the world, building on the success of the Singapore implementation.

"We always felt that Singapore is an excellent test-bed, primarily because the infrastructure is quite advanced," he says. "This solution will also do very well in countries which are still very paper-based. In India it is not just a question of paper-based processes, but the very large geography can make it difficult to attain services. Therefore the internet is one of the best ways to get original documents."

Oon describes how the traditional means of tax collection in India involves tax payers using collection agencies where they receive a certificate to prove that they have paid tax for the year.

"If you were to change that to the internet, how do you go about protecting your document? Our solution provides the answer, and because these certificates can be distributed across the internet, instead of the 50-100 different tax collection agencies in India, you could reduce that to a single data centre," Oon argues. "When we first started to work on the product, we focused on creating a highly secure end-document, and we thought it was very good for documents of significant value. But as we do more work with the market, we realise that the solution opens up a whole slew of opportunities."

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Web: www.radiantrust.com

Transactional microprinting
You'd have to magnify this page by 1600 per cent to read the words

Optical watermark
Now you see it ... but if you photocopy it, you won't.

2D barcode
Up to 4k of document data, encrypted

