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# COUNTERFEIT MONEY

*Keeping a Step Ahead of Criminals*

*January 7, 2015*

Counterfeiting is a high-margin \$654 billion growth industry largely run by criminal organizations that have few disincentives to stop. Counterfeit money is a small sub-market that uses the latest innovative anti-counterfeiting technologies. Yet, in spite of these precautions, criminals continue to print banknotes and forge coins. This report details the latest development in the counterfeit money industry and how we believe Nanotech Security Corp., a Sophic Capital client, can provide the next innovation for widespread adoption by central banks and mints.

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## Introduction

**Counterfeit money is *not* the largest counterfeit market, but banknotes incorporate the most advanced anti-counterfeiting technologies.** In spite of these anti-forging measures, criminals continue to manufacture fake banknotes and, increasingly, fake coins. In this report, we detail some of the latest developments in the counterfeit money market and highlight how Nanotech Security, a Sophic Capital client, can provide the next anti-counterfeiting technology to central banks and mints.

## Counterfeit Money is *NOT* the Biggest Market

**The global counterfeit money market is small compared to the counterfeit packaged goods market.** From 2005 through the first half of 2014, the Bank of England<sup>i</sup> removed £81 million of fake notes from circulation. In 2013, U.S. authorities recovered about \$89 million in counterfeit money<sup>ii</sup>. And using European Central Bank data, we estimate that about €17 million worth of fake Euros were recovered in the second half of 2013<sup>iii</sup>. We admit that these numbers represent only what was recovered and not what is in circulation. However, the numbers are low compared to counterfeit packaged goods – the U.S. Customs and Border Protection alone seized \$1.7 billion in counterfeit goods in 2013<sup>iv</sup> (up from 1.2 billion in 2012.)



*Phony £00,000 that criminals used to try to defraud the Bank of England from £28 billion.*

Source: [Mirror](#)

**According to the U.S. Secret Service<sup>v</sup>, about \$1 trillion of U.S. banknotes are in circulation (about 75% of them are outside of the U.S.), and only about \$2.5 billion, or one quarter of one percent, are fake.** This pales compared to the \$200 billion<sup>vi</sup> of fake pharmaceutical drugs that are sold annually or the overall \$654 billion counterfeit goods industry<sup>vii</sup>. And since we published our first counterfeiting report in October 2014, the counterfeit money news flow demonstrates that it is a global phenomenon.

## *Italian Police Break the World's Largest Counterfeit Money Ring*

**In November 2014, Italian police arrested 53 people suspected of operating an international counterfeit money operation<sup>viii</sup>.** Police said the counterfeiters were part of the “Napoli Group,” a counterfeiting organization thought responsible for printing and distributing 90% of the world’s counterfeit money<sup>ix</sup> and possibly half a billion fake Euros over the past 15 years. However, Giugliano, where the group operated outside of Naples, is notorious for counterfeiting. In 2009, Italian police arrested over 49 people and issued 109 arrest warrants for operating a printing laboratory and mint in the area<sup>x</sup>. The face value of the notes recovered were worth over €1.2 billion.

**In an unrelated seizure in December 2014, Italian police seized €556,000 in fake coins minted in China<sup>xi</sup>.** The fakes were minted in €1 and €2 denominations, and according to the prosecutor, the €2 coins were “*a perfect product.*”<sup>xiii</sup> Police arrested twelve people, including four Chinese nationals.

### *Cambodia’s Police Pounce on Counterfeiters*

**This past fall, Cambodia’s police seized \$7.2 million of counterfeit hundred dollar bills at a remote border crossing with Thailand<sup>xiii</sup>.** The U.S. Secret Service stated that the notes could be traced to a Thai counterfeiting operation. This follows a 2013 Thai bust of \$3.7 million in fake U.S. notes. A Special Secret Service agent estimated that it took two months to manufacture the \$7.2 million, and that “*You need talented people to do this.*”

### *Peruvian Police Seize U.S. Banknotes Destined for Venezuela*

**On November 30, 2014, Peruvian police disbanded a criminal organization that fabricated fake U.S. banknotes for Venezuela, Bolivia, and Argentina<sup>xiv</sup>.** The police recovered \$3.7 million in fake U.S. notes, bringing their 2014 total to \$18 million in addition to €900,000 seized during the year. South American criminal organizations are taking advantage of currency controls in Venezuela and Argentina, making it easier to circulate counterfeit notes due to the desperation of many people to preserve their purchasing wealth.

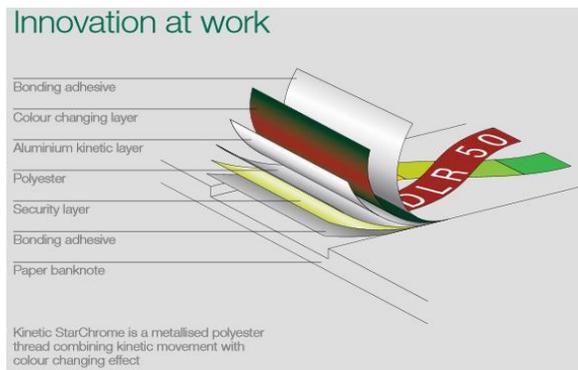
## **Criminals are Tech Savvy**

**A perfect reproduction is not the goal.** Allister McCullum, a former counterfeit expert at the European Central Bank, stated that counterfeiters “*...aren’t interested in producing near-perfect notes that will get past bank checking machines... They just aim for something that’s good enough to fool the general public.*”<sup>xv</sup>

**Criminals can still by-pass the best anti-counterfeit technology available.** When New York police stopped a woman for speeding, they found 87 one hundred dollar bills in her possession. The U.S. Secret Service determined that the bills were counterfeit, complete with water marks, colour-shifting ink, and embedded security strips<sup>xvi</sup>. Although the bills were sophisticated, the woman was not; she kept a ledger tracking where she had passed other counterfeit bills. The victims included: Home Depot, Lowe’s, Target, and Wal-Mart.

## **We Believe the Best Holographic Security Applications are on Banknotes**

**Although we stated that money counterfeiting is the smallest market, we highlight some of the major banknote manufacturers.** Our reasoning is that banknote manufacturers likely have the best holographic technologies – which could explain why counterfeiting in this vertical is small. And central banks are likely to adopt many of these technologies in the estimated 130 to 160 billion<sup>xvii</sup> banknotes printed annually.



*De La Rue 2014 Annual Report*

## A Business Printing Money

**De La Rue (DLAR:LON), the world's largest commercial money and passport printer, increased revenue 6% year-over-year to £513 million in 2014.** Over 66% of revenue came from the currency segment, with the balance coming from identity systems, security products, and cash processing solutions. Growth in the currency segment continues: In October 2014, De La Rue signed a 10-year contract with the Bank of England to print Sterling notes.

**De La Rue believes the use of holograms in currencies is “levelling off.”** The 200 year-old company (which has been involved in the production of over 150 national currencies) notes that 42% of new banknotes issued since 2011 have implemented colour-changing features, with 40% of them using colour-changing threads<sup>xviii</sup>. The company stated that holograms were strong in the 1990s and 2000s, and although holograms continued to be widely used, their adoption appears to be “levelling off<sup>xix</sup>.”

## Seeing is Believing

**Louisenthal, a subsidiary of Giesecke & Devrient, is a manufacturer of banknote paper, security paper, and security features.** In addition to a wide-range of holographic threads, the company offers a variety of banknote security features some with clear windows embedded with holograms, others colour-changing, and some with 3D effects which allow users to engage the note and verify its authenticity.

## Accepting Paul Revere's Challenge

**Crane Currency is a 200-year-old banknote manufacturer that has been the sole supplier of U.S. banknote paper for seven generations.** Lore has it that during Paul Revere's famed midnight ride, the patriot stabled his horse at a paper mill run by Thomas Crane and asked him to create notes for the colonists taking up arms<sup>xx</sup>. Since then, the company has continued to evolve banknote security features. Both the U.S. Department of the Treasury and the Bank of England use Crane's MOTION Switch technology, an animation that switches between images when a note is tilted.

## Stamping out Counterfeits

**KURZ is a major supplier of hot stamping technology, a method where heat transfers a foil image onto a surface.** The company has hot stamping hologram products, self-adhesive labels, laminating foils, and tear stripes. Over 100 countries implement the foil-based optical solutions of KINEGRAM, KURZ's daughter company, to secure their governments' documents and banknotes.

## Criminals Can Forge Holograms

**A glance at any currency note in the world reveals that they are artistic masterpieces.** Not every style will appeal to each person, but one cannot question the art embedded in each note. The reason for this is simple: Unique, artistic designs are difficult to replicate. Or are they?

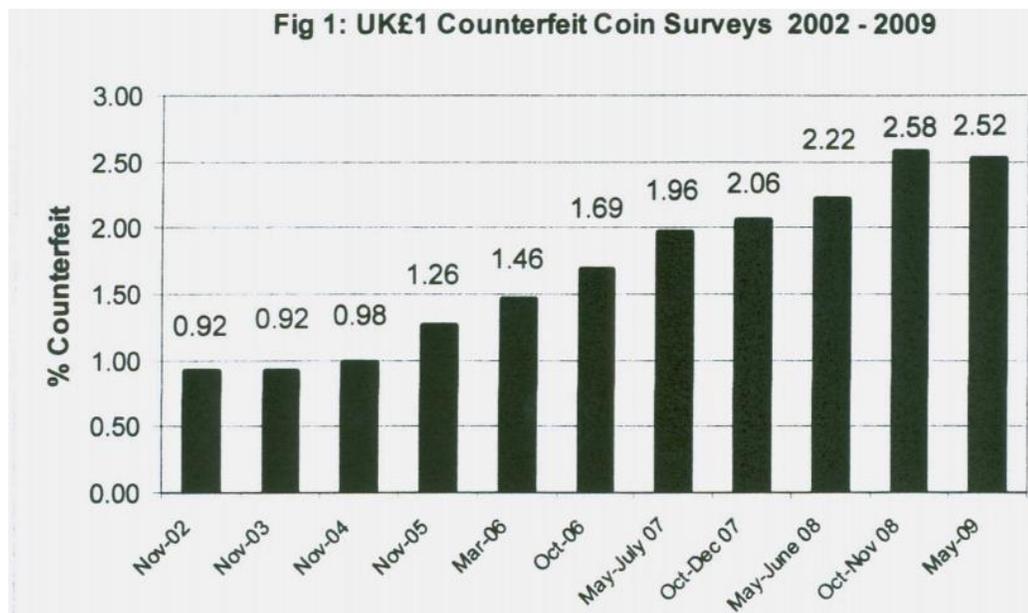
**Forgers are generational in Giugliano, Italy.** Alessandro Gentili, who use to command Italy's Carabinieri unit responsible for combating forgers, stated that today's counterfeiters are experts in graphic arts, printing, and computer science<sup>xxi</sup>. Fabio Tonacci<sup>xxii</sup>, an Italian journalist who reported on the counterfeit business, noted that there are few printers who know how to replicate security features. These printers are so valuable that criminals will keep tabs on a master forger even if he is incarcerated.

## Beware of Coins

**Money counterfeiters used to avoid minting coins because of the lower denominations, and coins are more difficult to put into circulation.** The margins aren't as good as banknotes either, yet one U.K. counterfeiter, who forged over 5 million coins, noted<sup>xxiii</sup> that he could produce a £1 coin for 30 pence and sell it for 60 pence.

**Few anti-counterfeiting technologies exist for coins.** Counterfeit coins are more difficult to police since they typically don't have security features such as RFIDs, watermarks, and holograms. However, as we previously mentioned with the fake Euro coins that were minted in China, markets do exist for counterfeit coins. In fact, in 2009, the United Kingdom's Royal Mint estimated<sup>xxiv</sup> that about 2.5% of £1 coins in circulation were counterfeit, and as shown in Exhibit 1, the rate of incidence increased over the prior eight years.

### Exhibit 1: Historical UK£1 Counterfeit Surveys



Source: The Royal Mint

The “*most secure circulating coin in the world to date.*”<sup>xxv</sup> This distinction belongs to United Kingdom’s new £1 coins, scheduled to replace the current coin by 2017. The security features embedded in the future coin include twelve sides, two metals, and what the Royal Mint calls an “Integrated Secure Identification System” (iSIS), which has been used in U.K. banknotes for decades. The Mint hasn’t released specific details on iSIS, but the feature is embedded within the coin.



*The Royal Mint's new £1 coin.  
Source: The Royal Mint*

## Beyond Holograms - Security from Butterfly Wings

**Although holograms are levelling off for currency security, colour-changing technologies are having a good decade.** De La Rue<sup>xxvi</sup> notes that colour-changing technologies work, are robust, and the public recognizes them. Stripes and threads are popular and difficult to copy, and central banks like to combine them with holograms for added protection. Given that colour-changing technologies are popular, we highlight a solution that has not been implemented in the currency market and is easily adaptable to commercial packaging (a market potentially worth \$143 billion by 2020.)

**Nanotech Security (NTS:TSXV), a Sophic Capital client, supplies KolourOptik™ technology, an anti-counterfeiting, nanotechnology solution based upon the optical properties of the blue morpho butterfly.** KolourOptik™ technology creates a grid of nano-sized holes that replicate the interaction light has with this butterfly’s wings. The result is the creation of vibrantly-coloured images that appear similar to LEDs when illuminated. Enterprises and central banks can apply this anti-counterfeiting solution on a variety of surfaces, including: metals, plastics, acrylic, cloth, and paper, without the need for dyes or pigments.



[www.nanosecurity.ca](http://www.nanosecurity.ca)

**Because KolourOptik™ images can be applied to almost any surface, central banks can embed the anti-counterfeiting security tags on both banknotes and coins.** In fact, KolourOptik™ tags can be embedded on any packaging (boxes, pharmaceutical pills, handbags) providing Nanotech Security with a broad range of market opportunities. And here is another important differentiator: unlike holograms, KolourOptik™ tags cannot be peeled off. And due to how the nanostructures interact with light, data can be stored in these security features that can easily be read with an optical reader. All of these features make KolourOptik™ images stand out from traditional holograms.

**On August 26, 2014, Nanotech announced the acquisition of Fortress Optical Features.** This acquisition moved Nanotech into the optical thin film space, a technology developed by the Bank of Canada and sold to Fortress in 2011 yet utilized by 11 international issuing authorities. This thin film technology produces vivid and bold colour shift film for banknote security threads. Nanotech expects to increase its presence in the thin film market, with an initial focus on banknotes, and is also working on combining KolourOptik™ with the optical thin film technology to create a new and more secure banknote feature. This new feature will create bold overt features with multiple levels of interactivity and authentication.



## Conclusions

**Counterfeit money is a small market that incorporates the best anti-counterfeiting technologies.** But in spite of the technological advances, counterfeiters continue to forge banknotes and increasingly coins. Central banks always need to stay a step ahead of the counterfeiters, and this is why we believe Nanotech Security's KolourOptik™ technology will be a winner. KolourOptik™ images can be embedded on any surface (including paper, plastic, and metal), and unlike holograms, cannot be peeled off. Nanotech Security, a Sophic Capital client, purchased Fortress Optical Features this past summer, giving the company a Rolodex of banknote clients.

## Acronyms Used in this Report

<b>3D</b>	three dimensional
<b>iSIS</b>	integrated secure identification system
<b>RFID</b>	radio frequency identification

## References

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- <sup>i</sup> Bank of England, [Counterfeit Bank of England Banknotes](#), 2014
- <sup>ii</sup> Del Quentin Wilber, [Woman With Printer Shows the Digital Ease of Bogus Cash](#), Bloomberg, May 7, 2014
- <sup>iii</sup> European Central Bank, [More counterfeits in second half of 2013 but overall number remains very low](#), January 13, 2014
- <sup>iv</sup> U.S. Customs and Border Protection, [CBP Fiscal Year 2013 in Review](#), January 17, 2014
- <sup>v</sup> Prak Chan Thul and Andrew R.C. Marshall, [Record bust in Cambodia signals Thai dollar counterfeiting boom](#), Reuters, October 12, 2014
- <sup>vi</sup> Havoscope, [Ranking of Counterfeit Goods](#)
- <sup>vii</sup> Havoscope, [Anti-Counterfeiting News and Counterfeit Goods Statistics](#)
- <sup>viii</sup> Europol, [Europol supports Italian Carabinieri to take down counterfeit currency network](#), November 26, 2014
- <sup>ix</sup> Michael Day, [Napoli Group members arrested over a fake €300 note and a paper trail leading to the Italian underworld](#), The Independent, November 27, 2014
- <sup>x</sup> United Nations Office on Drugs and Crime, [Operazione "Giotto"](#)
- <sup>xi</sup> Wladimir Pantaleone, [Italy seizes 556,000 euros in fake coins minted in China](#), Reuters, December 12, 2014
- <sup>xii</sup> Ibid.
- <sup>xiii</sup> Prak Chan Thul and Andrew R.C. Marshall, [Record bust in Cambodia signals Thai dollar counterfeiting boom](#), Reuters, October 12, 2014
- <sup>xiv</sup> Kyra Gurney, [Peru Counterfeit Dollars Feed Venezuela, US Markets](#), InSight Crime, December 3, 2014
- <sup>xv</sup> Philip Jacobson, [The Town That Prints Money: Europe's Counterfeit Capital](#), Newsweek, April 28, 2014
- <sup>xvi</sup> Lois Wilson, [Woman gets prison for fake money scheme](#), StarGazette, November 14, 2014
- <sup>xvii</sup> Ylan Q Mui, [Crane has provided the paper for U.S. money for centuries; now it's going global](#), The Washington Post, December 13, 2013
- <sup>xviii</sup> De La Rue, [Trends in banknote features](#), page 2, 2013
- <sup>xix</sup> Ibid.
- <sup>xx</sup> Ylan Q Mui, [Crane has provided the paper for U.S. money for centuries; now it's going global](#), The Washington Post, December 13, 2013
- <sup>xxi</sup> Philip Jacobson, [The Town That Prints Money: Europe's Counterfeit Capital](#), Newsweek, April 28, 2014
- <sup>xxii</sup> Fabio Tonacci, [Counterfeit euros, artists of Giugliano swindle Bankers and Policemen](#), March 16, 2012
- <sup>xxiii</sup> Adam Luck, [Heads or tails? One of these £1 coins is a fake. Today every one in 40 is a counterfeit](#), Daily Mail, November 9, 2009
- <sup>xxiv</sup> The Royal Mint, [Report on UK£1 counterfeit survey](#), May 2009, page 2
- <sup>xxv</sup> The Royal Mint, [The Royal Mint to manufacture modern new £1 coin](#), March 19, 2014
- <sup>xxvi</sup> De La Rue, [Trends in banknote features](#), 2013, page 2

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