Fraud Detection

Using advanced analytics to detect and prevent credit card fraud

People matter, results count.

The opportunity

Timely fraud detection is vital for financial institutions; failure to give this area proper attention brings financial, reputational, and punitive risks. Capgemini is active in many different areas of fraud prevention, but this paper focuses mainly on the example of credit card fraud.

In financial terms, this type of fraud is estimated to be worth £341m per annum in the UK alone[1], and in the U.S. it is has been said to cost 0.07% of transaction values[2]. Despite the introduction of measures like chip-and-pin cards in the EU, the problem is in some ways becoming harder because of the proliferation of different ways to use cards, particularly "card holder not present" transactions by post or online.

Detecting card frauds is challenging for a number of reasons. There is a trade-off between thorough fraud detection (which can slow processing) and customer satisfaction (which demands a rapid response). Current systems tend to produce too many false positives, as well as being open to circumvention by knowledgeable fraudsters. Many banks have multiple transaction systems that make it hard to measure the problem and the success of defenses. Commonly, there are simply not enough people to investigate suspicious cases in a timely manner.

Institutions that overcome these problems can gain competitive advantage by reducing their costs and offering a better service to customers and merchants.

The solution

What you need is a system that:

- Integrates data from different sources and in different formats for analysis, allowing comprehensive monitoring of individual behavior across all accounts and transactions

- Detects fraud fast and reliably, passing the results in real-time to authorization systems

- Prioritizes suspicious cases for investigation according to business value

The Capgemini solution does all this at relatively low cost (ROI of nearly 60% is achievable). Though it is based on proven elements, the solution is customized for every client so that you buy only the elements that you need.

How it works
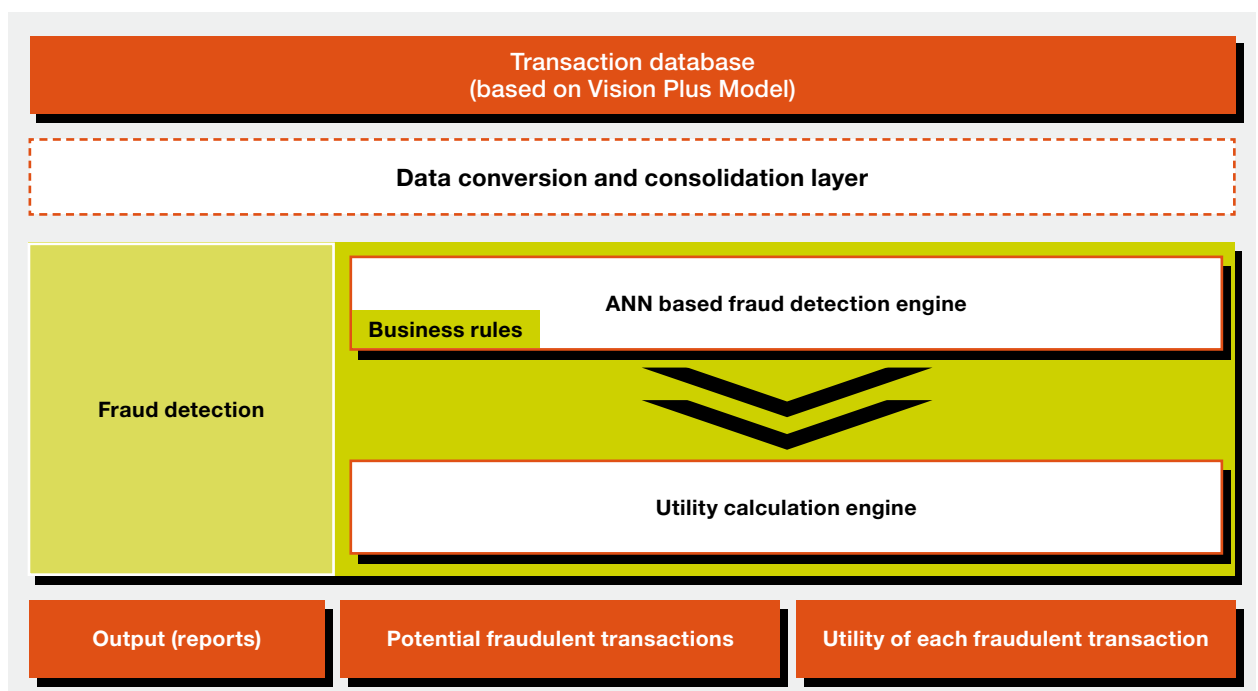
Integration via Vision Plus
Capgemini achieves integration across multiple systems by using the Vision Plus data model, the global standard for data management. Major banks usually have Vision Plus in place already, which allows us to implement very rapidly.

Business rules
Our fraud detection engine applies three sets of rules:

- **Federal Trade Commission red flag rules**, which find possible identity theft cases, and also ensure regulatory compliance in the U.S.

- **Behavioral rules**, which we derive from the client's historical data using artificial neural networks (ANN) – this technology is self-learning so the more the solution is used the better it gets

Overview of fraud detection process

Transaction database
(based on Vision Plus Model)

Data conversion and consolidation layer

Fraud detection

ANN based fraud detection engine

Business rules

Utility calculation engine

Output (reports)

Potential fraudulent transactions

Utility of each fraudulent transaction

- **Observed rules**, which our specialist consultants develop jointly with the client's own experts to improve detection and reduce false positives

By applying all of these rules, it is possible to achieve accuracy of about 98%.

Prioritization for investigation

An important feature of our solution is that it not only identifies suspicious transactions but also assigns each one a "utility score" which enables them to be prioritized for investigation according to their importance to the business. The score reflects a number of factors including transaction amount and type, and characteristics of the customer.

Reporting that drives action

The data output from our fraud analytics engine can be sliced and diced in virtually any way to answer questions and flag up problem areas. Findings are reported via graphic dashboards that allow managers not just to see where priorities for investigating transactions need adjusting, but also to spot trends and anomalies that need attention.

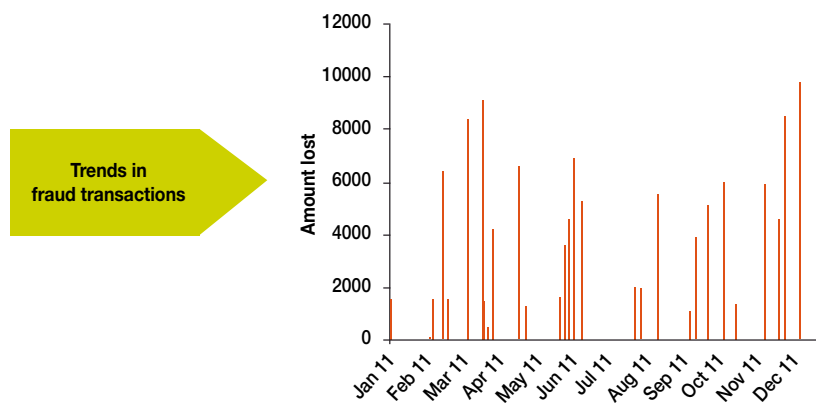### Our fraud detection capabilities

Capgemini's global fraud detection team brings together finance industry experts with specialists in artificial intelligence, and in the management and integration of large-scale and disparate data. This multi-faceted expertise allows us to build solutions that apply advanced analytic techniques across all relevant operational systems to build a complete picture of an organization's fraud risks – and then to present our findings in a way that makes sense to non-specialists. We collaborate with your in-house experts to ensure that we understand your needs and that we leave you with a solution that can be used daily to reduce vulnerability to fraud.

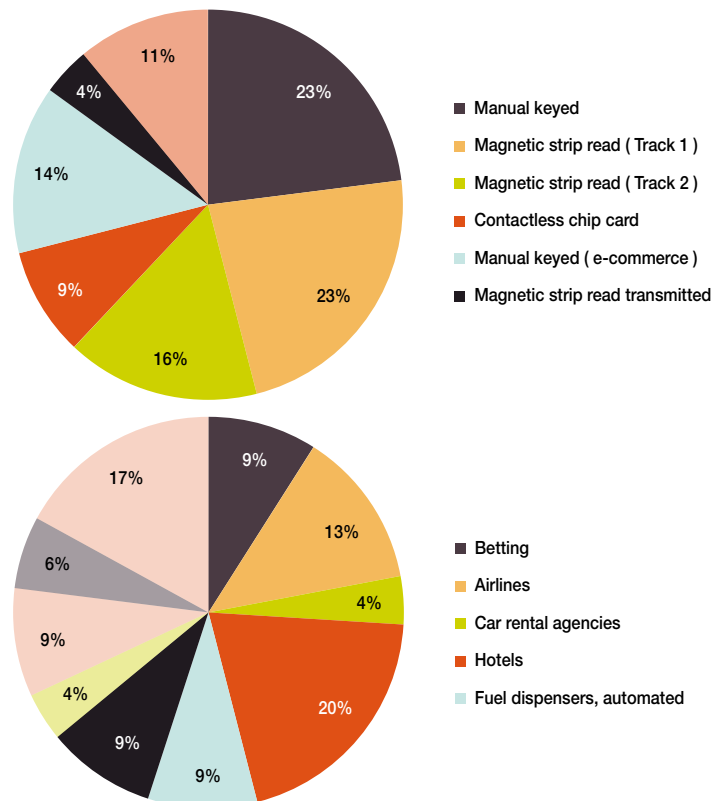### Capgemini Business Analytics

Capgemini's Business Analytics global practice network is a core unit within the Business Information Management (BIM) global service line and operates in 25 locations across the world, drawing on a database of over 100 analytics client credentials and analytical models. It provides high-function analytics-based solutions to all major industry sectors and business functions.

Capgemini has over 7,000 consultants working in BIM across the world. We work with all the leading big data and analytical technologies, and provide services to support business analytics from high-level strategy to managed outsourced services. We recognize that analytics are specific to industry sector and sub-sector, and have experts and solutions for each one.

Sample dashboard elements

Trends in fraud transactions

Share of fraud transaction from different sources

- Manual keyed
- Magnetic strip read (Track 1)
- Magnetic strip read (Track 2)
- Contactless chip card
- Manual keyed (e-commerce)
- Magnetic strip read transmitted

- Betting
- Airlines
- Car rental agencies
- Hotels
- Fuel dispensers, automated

[1] *2011 losses continue downward trend*, The UK Cards Association, press release, 7 March, 2012
[2] Credit Card Issuer Fraud Management, Report Highlights, December 2008

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Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its worldwide delivery model.

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More information about our services, offices and research is available at
www.capgemini.com

For further information contact us at **bim@capgemini.com** or visit **www.capgemini.com/bim**

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