Fraud Detection

Using advanced analytics to detect and prevent credit card fraud
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 alone¹, and in the U.S. it is has been said to cost 0.07% of transaction values². 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
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.

Sample dashboard elements

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2 Credit Card Issuer Fraud Management, Report Highlights, December 2008
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