over $20 million on an engagement that took less than 12 staff months of effort to complete and deliver.

The most successful application fraud detection systems are based on extensive customer historical data. Patterns of both fraudsters (“bads”) and nonfraudsters (“goods”) are created, based on many variables. These variables include not only the information from the application form, but also information from a number of other sources. Some of the most predictive variables are those derived from combinations of variables based on domain knowledge.

Some of the sources of information include

- Near real-time access to credit bureau data;
  - Names and addresses;
  - Employer data;
  - Banking and credit data.

- Characteristics of the applicant extracted from other external data sources (e.g., ZIP code lists by city, county, and state). Checks will be made to see whether names and addresses match among different sources of information for an applicant. Other checks may include
  - The phone number is in the list for a given ZIP code;
  - The phone number is valid or invalid;
  - The SSN is valid or invalid;
  - SSN was never issued;
  - Date of birth is valid or suspicious;
  -Aliases were used in the past.

- Checks will be made for duplicates among specific services and for missing services that are related to existing services for an applicant.

- Many temporal abstraction variables are based on
  - Time since a specific action occurred, like a late payment;
  - Time since last loan charge-off;
  - Number and balances of charge-offs during the last time period.

The application fraud modeling system may be embedded in a system that incorporates the checks listed here and may operate on all data gathered during all phases of data checking. There are many fraud management systems based in general on this approach. Included in these systems are

- The Fair Isaac: Falcon Fraud Manager
- Agilis International: NetMind
- SAS: Fraud Management
- Neural Technologies: Minotaur
- 41st Parameter: Fraud Management Solutions
- SAP: Biometric Fraud Mitigation Solution

Some of these products include a number of optional modules that contain various kinds of checks, powerful modeling algorithms, and a complex scoring system. Some of these systems can be put in place to analyze credit card applications with a near real-time response rate.