

Implementing and Evaluating Analytics to Improve Fraud Detection

MBA's National Fraud Issues Conference

March 2007

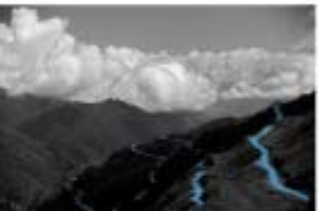
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Fraud Management at New Century

New Century Has a Zero-Tolerance Policy for Fraud:

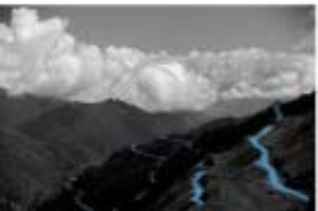
- Recognized need to enhance tools and processes to achieve goals
- Knew we had substantial asset in historical data that could be leveraged more fully
- Prior to implementing predictive analytics, used credit bureau information, expert rules, underwriters, QA processes and audits to identify fraud
- Recognized that a targeted approach to identify high risk loans would be more effective than the production referrals we were using.



Establishing Fraud Management Goals

Define Your Goals:

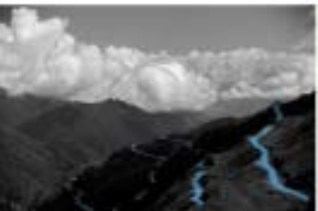
- Identify fraud and misrepresentation before funding the loan
- Focus the attention of staff on higher risk loan applications
- Identify trends or patterns that could be a predictor of fraud or performance problems
- Identify sources of High Risk loans and applications with misrepresentations or fraud
- Lower First Payment Default (FPD) and Early Payment Default (EPD)



The Importance of Evaluation

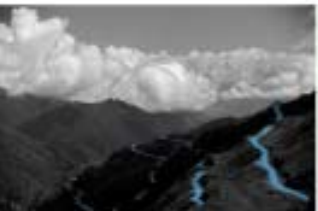
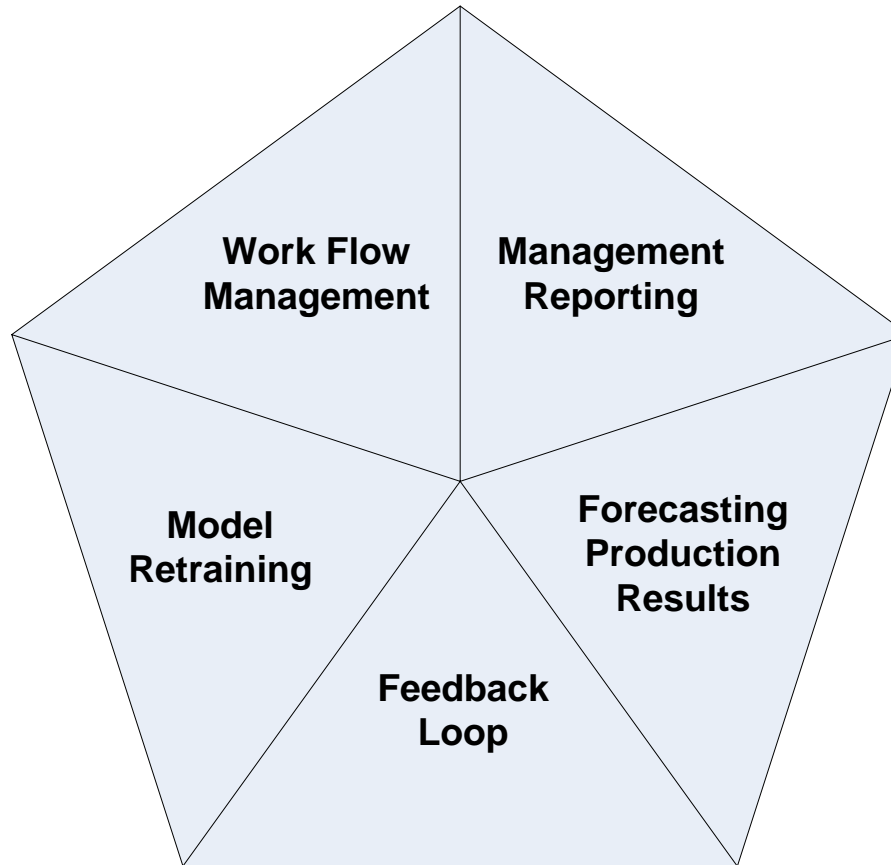
Establishing Evaluation Plan and Process Enables You To:

- Effectively measure results
- Ensure focus remains on evaluating highest risk loans
- Identify issues and continuously refine processes to maximize results



Determining the Evaluation Process

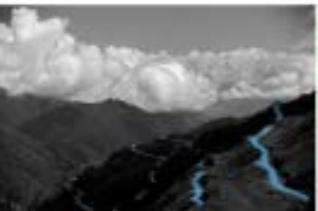
Main Elements of New Century's Evaluation Process:



Why New Century Chose Predictive Analytics

Main Reasons New Century Chose to Implement Predictive Analytic Solution:

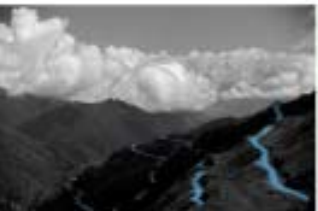
- Uses historical data to identify indicators of fraud and EPD
- Objectively identifies suspicious applications for further review
- Doesn't impede production process
- Test provided high detection rates and low false-positive rates
- Test showed the predictive model rank-orders risk well, so we focus of reviewing only the riskiest applications



Defining a Fraud Predictive Analytics Scoring Tool

How does the Predictive Analytics Fraud Scoring Tool work at New Century?

1. The predictive analytics model was built using historical patterns of good and bad loans, and the behavioral trends of applicants, brokers, and other entities involved in the transaction.
2. During the underwriting process, data from the application is run through the scoring model real-time and the model assigns a score indicating the risk level of the loan for misrepresentation.
3. Scoring model output includes the score and a set of risk indicators to help staff focus on applications and risk factors that are the most likely area(s) of potential risk.
4. High risk loans are selected (out-sorted) that require review prior to docs/funding from our risk management staff and a condition is automatically placed on the file.
5. Model continues to be “trained” and updated based on the audit results and findings.
6. Performance can be tracked at the score and loan level to determine if the model is performing within specifications.
7. The scoring tools have been customized to support different loan segments such as prime, non-prime, and Alt-A.



Risk Analysis Screen

Loan
Details

Loan Number	1200067881	Loan Status	Pending	LTV	66.667%	FE Ratio	17.063%
Loan Amount	\$500,000.00	Cashout	N	Status Date	10/20/2006 13:44:31	CLTV	66.667%
Loan Type	Retail	Number of Payments	0	First Time Home Buyer	N	BE Ratio	17.063%
Purpose	Cashout Refinance	Branch Code	2223	Branch Name	Riverside		
Doc Type	Limited Doc - 6 M BK STMTS	LO Code	99913189	LO Name	Amy Ciocan		
Application Date	10/05/2006	Acct. Mgr					

Borrower
Details

Retail Testloan - P		Spouse Testloan		Borrower Testloan	
Name	Retail Testloan	SSN	562-12-3456	Property Address	364647 Testing St
Mailing Address	364647 Testing St	Age	56	Property City	Beverly Hills
Mailing City	Beverly Hills	Credit Score	751	Property State	CA
Mailing State	CA	Home Phone	(213)456-7890	Property Zip	90210
Monthly Income	\$18,117.67	Work Phone	(213)789-4565	Appraised Value	\$750,000.00
Self Employed	<input checked="" type="checkbox"/> Y	Employer	Self Employed	Appraiser Lic No	AR013932
				Appraiser Name	VINCENT P. DEL NEGRO

Predictive
Analytic
Results

<p>PAT Results</p> <p>PAT Score: 833 High Risk? <input checked="" type="checkbox"/> Yes</p> <p>PAT Run Date-Time: 07/26/2006 07:30:00 Run By: Eric Underwriter</p> <p>Risk Indicators</p> <ul style="list-style-type: none"> High Risk financial characteristics High risk loan characteristics High risk borrower characteristics Inconsistent employment characteristics High risk geographic area <p>Meets score threshold for high score loans Does not satisfy high risk rule No match to previous fraud phone #'s</p> <p>More Details</p>	<p>Required Action</p> <p>HIGH RISK LOAN Risk Manager review is required Condition #325 is created in Conditions Management</p> <p>Risk scoring is successful. Green check mark is attached to Risk Analysis node.</p> <p>Data entry issues detected.</p> <p>Run PAT Risk Score Close</p>
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Property
Details

Message to
Underwriters/
Risk
Manager

Workflow Management

Decide

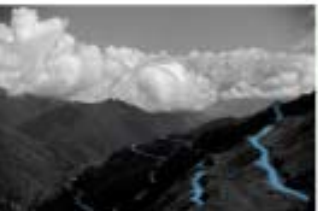
- When in the process the loans are scored
- How many times a loan can/will be re-scored
- When a flagged loan should be reviewed

Identify

- The loans that need to be reviewed
- The associates needed to review them

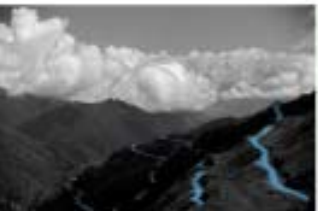
Track

- The results of the reviews to provide feedback, reporting, and re-training of future models



Management Reporting

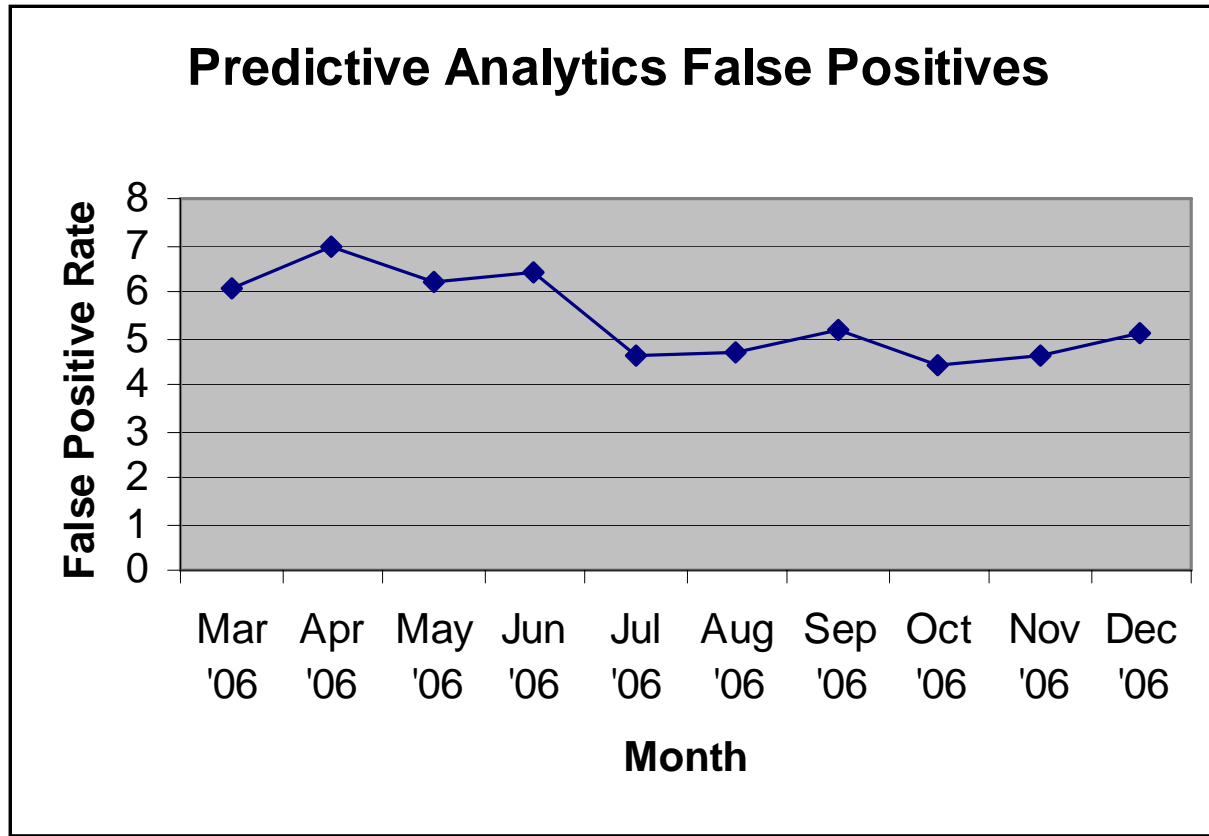
- Management Reporting is a cornerstone of communication strategy
- Access to data and analysis helps align decision-making process
- Sharing information consistently throughout the organization increases opportunities to identify issues and solutions
- Provides powerful tool to measure combination of productivity and effectiveness of risk managers
 - How many applications are they reviewing versus their peer group?
 - How many applications are they confirming as fraud?



Sample Management Report

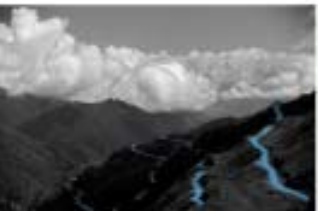
DIVISION	Flagged Loans			Confirmed Misrep		
	Total Apps Scored (#)	Loans Flagged (#)	% of Apps Flagged	# Confirmed MisRep	\$ Confirmed	Rate of Misrep / Suspicious (#)
Division A	4,900	300	6.1%	5	\$ 1,200,000	1.7%
Division B	3,950	350	8.9%	20	\$ 7,000,000	5.7%
Division C	5,875	200	3.4%	15	\$ 6,000,000	7.5%
Division D	5,395	150	2.8%	10	\$ 2,000,000	6.7%
Division E	4,800	200	4.2%	5	\$ 1,200,000	2.5%
Division F	5,750	150	2.6%	10	\$ 2,000,000	6.7%
Total	30,670	1,350	4.4%	65	\$ 19,400,000	4.8%

False Positive Chart



New Century averages between 4:1 and 6:1 false positives.

This means that on average we review less than 6 flagged applications to identify 1 confirmed or suspected fraud.



Loan Quality Scorecard

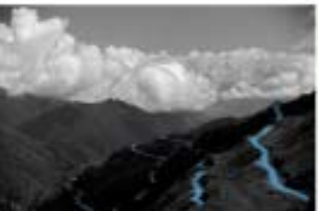
- Measure loan quality at many levels:
 - Individual loan level
 - Program level
 - By Division
 - By AE
- Using predictive analytics can identify pockets of good loans in underperforming loan programs
 - Helps prevent the elimination of entire programs, or the making of sweeping underwriting policy changes when good apps can be identified and confidently funded
- Loan quality scorecard provides team the information they need to make the right changes



Forecasting Production Results using a Fraud Scoring Tool

Why a Fraud Scoring tool should be used as a forecasting tool in production:

- Using a fraud scoring tool allows Management to increase forecasting accuracy for key production and risk prevention metrics.
- Using historical data, Risk Management is able to set a score threshold to accurately determine the percent of loans that will be flagged for review.
- This allows much greater accuracy in forecasting work volumes and FTE Requirements.
- Also, by using historical rates of misrep, accurate forecasts can be completed for preventing misrepresented loans.



Forecasting Production Results using a Fraud Scoring Tool

Forecasting Metrics using a Scoring Tool

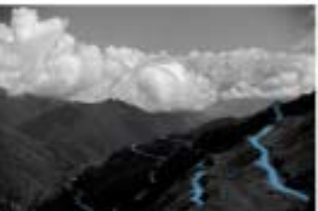
- Forecasted loans for risk management review
- Forecasted FTE requirements for high risk loans
- Forecasted prevented misrep loans (# / \$)
- Forecasted fraud misrep detection rate

Sample Forecasting

	Scoring Tool (Forecasting)						
	Volume Forecasts				Misrep Forecast		
	Forecasted Loan Flag Rate	Forecasted Applications	Forecasted # of Loans Flagged	Forecasted FTE Requirements	Forecasted Rate of Misrep	Forecasted Confirmed Misrep (#)	Forecasted Confirmed Misrep (\$)
Month 1	3.0%	34,567	1,037	6	10.0%	104	19,184,685
Month 2	3.0%	32,469	974	6	10.0%	97	18,020,295
Month 3	3.0%	38,576	1,157	7	10.0%	116	21,409,680
Month 4	3.0%	32,174	965	5	10.0%	97	17,856,570
Month 5	3.0%	37,698	1,131	6	10.0%	113	20,922,390
Month 6	3.0%	41,000	1,230	7	10.0%	123	22,755,000
Totals	4.5%	216,484	6,495	6	10.0%	649	\$ 120,148,620

Feedback Loop

- Providing a mechanism for continuous feedback on performance is critical
- Listening to, and acting on, that feedback is even more important
- You must be able to answer these 3 questions:
 - What went wrong or what did we miss?
 - What did I (we) learn from the situation?
 - What can/will I (we) do differently going forward?
- For example, monthly audits to investigate loans that were funded and subsequently confirmed as fraud
 - Outcome from audit used for training, strategy setting, challenge possibilities, and future loan prevention efforts.

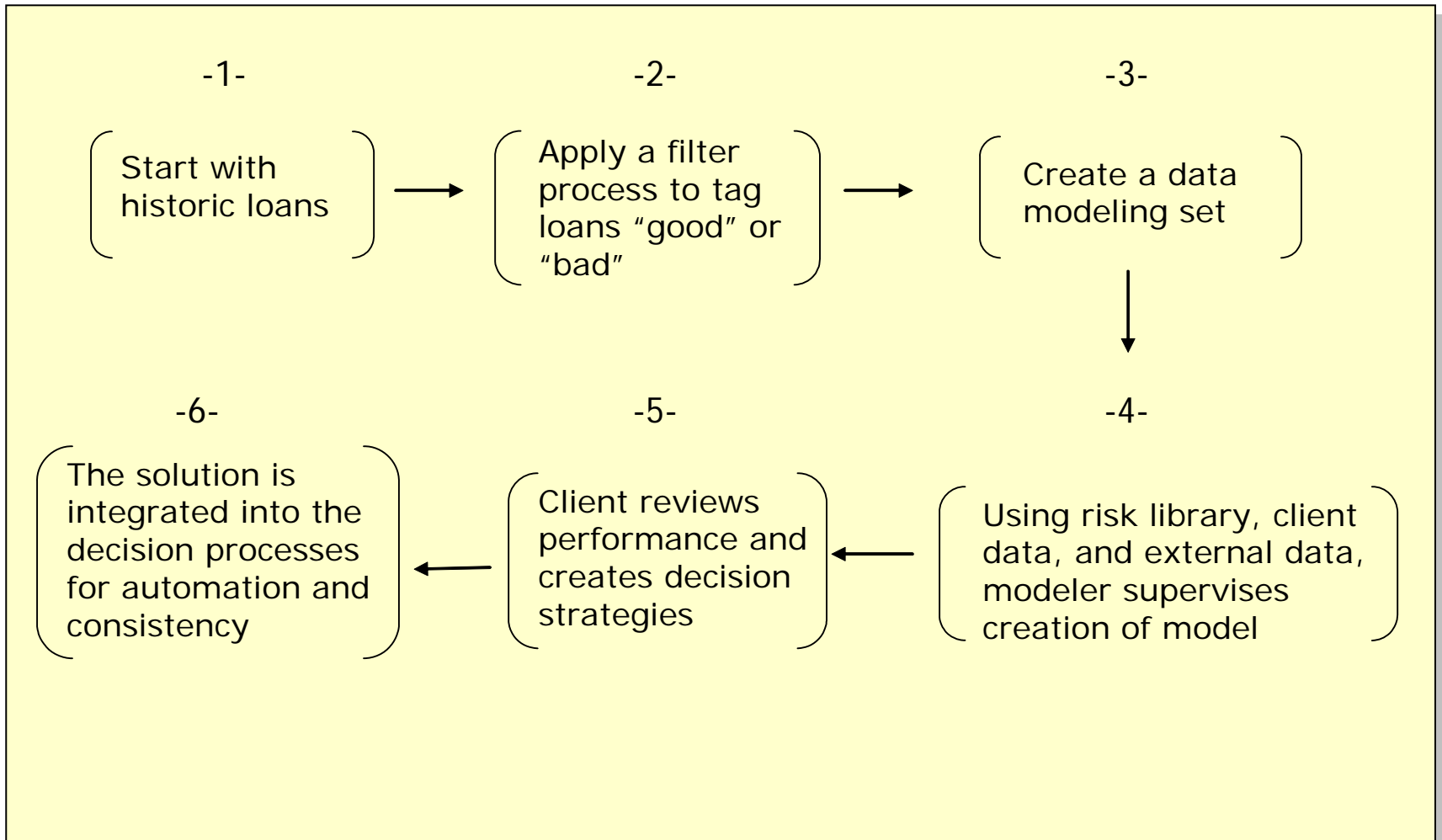


Model Retraining

- Fraud continually changes and evolves
- To continue to be successful, we must change and adapt our counter-measures
- Using predictive analytics helps detect more fraud, and also provides *expected* misrepresentation types -- reducing review time for risk managers
- How do you stay ahead of the fraud?
 - Flexibility
 - Add new solution components, such as Dynamic TRAITS™, broker scoring and monitoring, and refining models for specific products
 - Mine historic data to find new fraud patterns



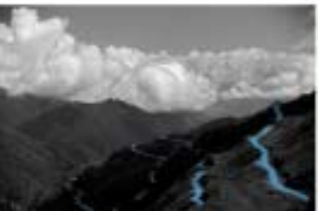
Using Historic Data to Find Fraud Patterns



Operational Impact

RESULTS

- Fewer loans that cannot be sold in the secondary market
- Fewer investor repurchase claims
- Better secondary marketing execution
- Operational savings
 - Low false positives reduce staffing requirements to review high risk loan applications
- Using predictive analytics, in 2006 we prevented nearly \$1billion in confirmed/suspected fraud from funding



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