



## Improving data-driven decisions

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## Where are the opportunities in Collections to be smarter?

- Judgement vs. data for better decisions
- Where models are most effective
- New thinking on systems and solutions



## About Windsor

- Business process reviews
- Basel II support
- Credit Management training
- Credit systems evaluation
- Scorecard development
- Data analytics
- Project management
- Market research
- Decision systems audit



Depth in analytics and consumer credit quality



## Client list

### **Mortgages:**

ING Direct  
Sparck Hypotheken  
Woolwich  
Baseline Capital  
Nationwide Building Society

### **Motor Finance:**

BMW Financial Services  
First Response Finance  
Ford Financial  
Daimler Chrysler

### **Personal Lending:**

IKANO  
The Funding Corporation  
Littlewoods Home  
Shopping  
The Royal Bank of Scotland

First National  
SNS Reaal Bank  
Abbey National  
Banco de Credito

### **Credit Cards:**

HSBC  
Pru One  
Morgan Stanley  
NextCard  
Barclaycard

### **Systems:**

PanCredit  
Talgentra  
London Bridge Software

### **Others:**

Ernst & Young  
EEC  
Indigo Value Analysis  
FSA  
MasterCard



# About The Credit Academy

- Credit Risk Management
- Collections Management & Strategies
- Credit Analytics
- Credit Scoring
- Portfolio Management



Specialist consumer credit analytics and management training



## An Example

HOME PHONE CALL	LEAVE A MESSAGE	20050610	12:57:20	OTHERS
HOME PHONE CALL	GET TELEPHONE MESSAGE	20050613	14:53:10	CLIENT
PRINT LETTER	LETTER SENT	20050615	11:30:45	LETTER SENT
HOME PHONE CALL	LINE BUSY	20050620	17:54:50	NO CONTACT
HOME PHONE CALL	LEAVE A MESSAGE	20050622	15:55:22	OTHERS
HOME PHONE CALL	LEAVE A MESSAGE	20050623	15:06:16	SIBLINGS
HOME PHONE CALL	LINE BUSY	20050811	19:26:51	NO CONTACT
PRINT LETTER	LETTER SENT	20050812	10:41:28	LETTER SENT
HOME PHONE CALL	LINE BUSY	20050816	15:18:37	NO CONTACT
HOME PHONE CALL	LINE BUSY	20051011	17:42:54	NO CONTACT
HOME PHONE CALL	LINE BUSY	20051012	18:16:45	NO CONTACT
PRINT LETTER	LETTER SENT	20051014	08:17:40	LETTER SENT
HOME PHONE CALL	LINE BUSY	20051018	15:23:58	NO CONTACT
HOME PHONE CALL	LINE BUSY	20051019	16:26:59	NO CONTACT
HOME PHONE CALL	LINE BUSY	20051020	16:12:05	NO CONTACT
HOME PHONE CALL	LINE BUSY	20051021	16:20:01	NO CONTACT
HOME PHONE CALL	LINE BUSY	20051024	16:30:49	NO CONTACT
HOME PHONE CALL	LINE BUSY	20051025	17:54:25	NO CONTACT
HOME PHONE CALL	LEAVE A MESSAGE	20051026	12:07:32	PARENTS
CUSTOMER INBOUND CALL	GET TELEPHONE MESSAGE	20051026	16:47:35	CLIENT
HOME VISIT	LEAVE A MESSAGE	20051026	17:20:13	PARENTS
PRINT LETTER	LETTER SENT	20051028	14:15:14	LETTER SENT
HOME PHONE CALL	CUSTOMER CANCELLED THE DEBT	20051028	17:26:13	CLIENT
HOME PHONE CALL	DONT ANSWER THE PHONE	20051212	12:58:42	NO CONTACT
HOME PHONE CALL	GET INFO ABOUT THE ACCOUNT	20051212	13:02:38	CLIENT

## Why Data?

- Objective
- Enables predictive models (scorecards) to be developed
- Encourages the discipline of comparing expected and observed performance

## But...

- Data quality is vital
- Models can degrade
- Individual assessment can be better
- Not all the information gets transformed into assessable fields

## Why Score?

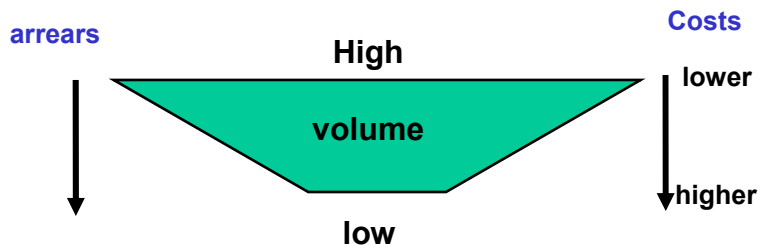
- Debts can be ranked
- Strategies can be segmented
- Provides the basis of efficient collections

Cost of Collection ↔ Likelihood of recovery

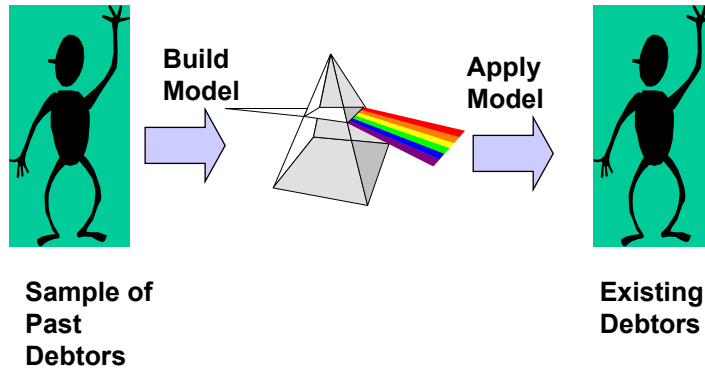


## Efficient collections

- Finding the most appropriate action

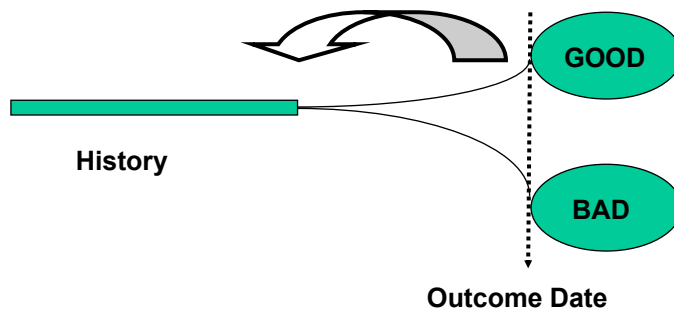


## Scoring in brief



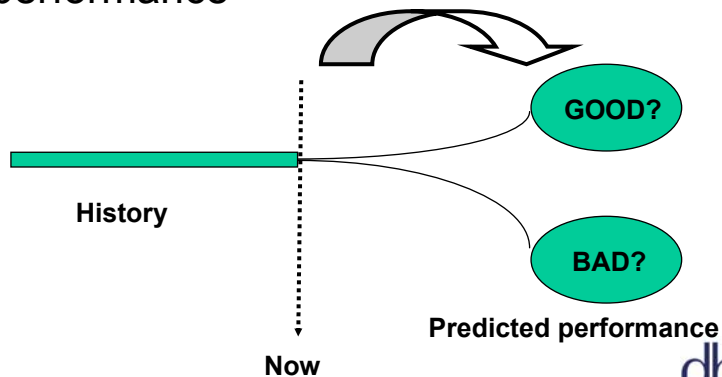
## Take a sample and work back...

- Find the characteristics that predicted 'Good' and 'Bad' behaviour



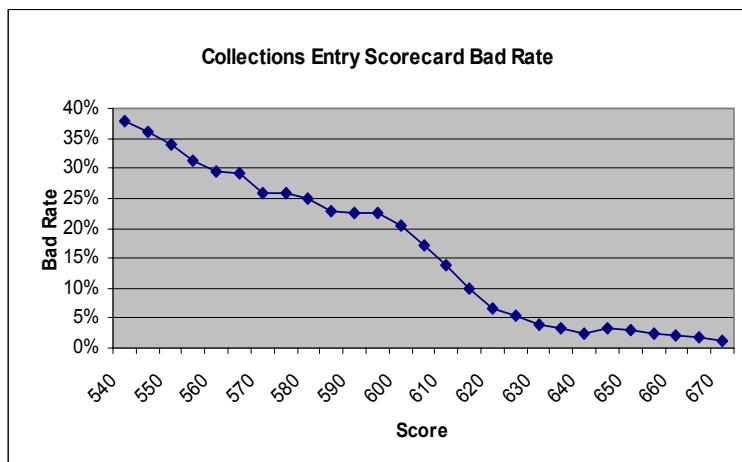
## Apply model to customers

- Use the History to predict the performance



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dbsg

## Score provides a ranking



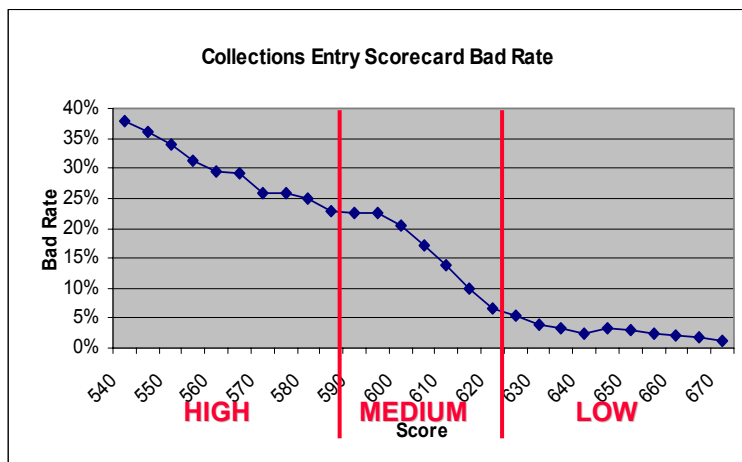
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# Entry Collections Strategy

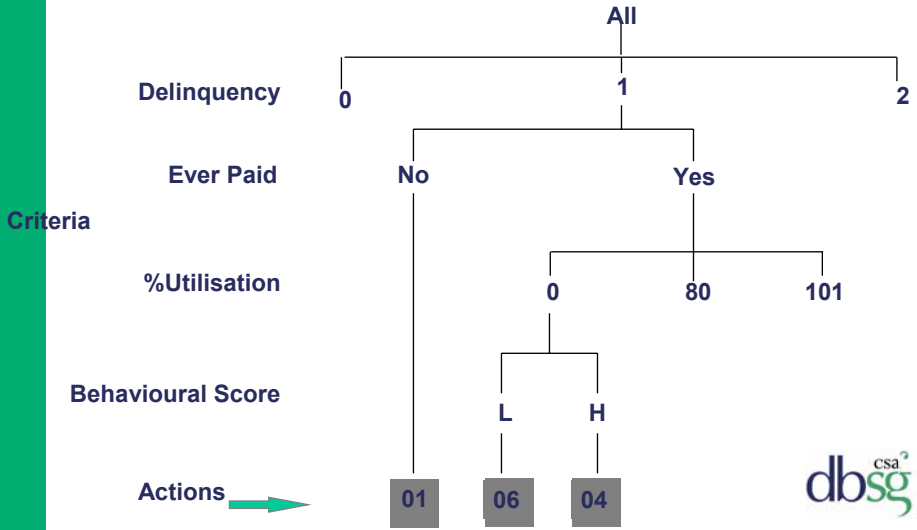
- What is our objective?
  - Avoid working the customers who will pay (80% in the first 20 days - card example)
  - Remind the customers who need prompting
  - Early identification of very high risk



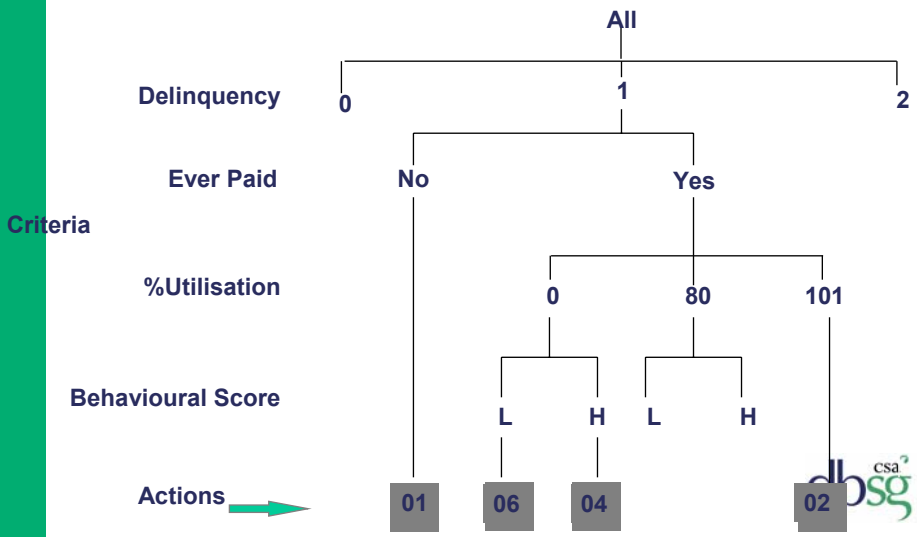
# Split into strategy segments



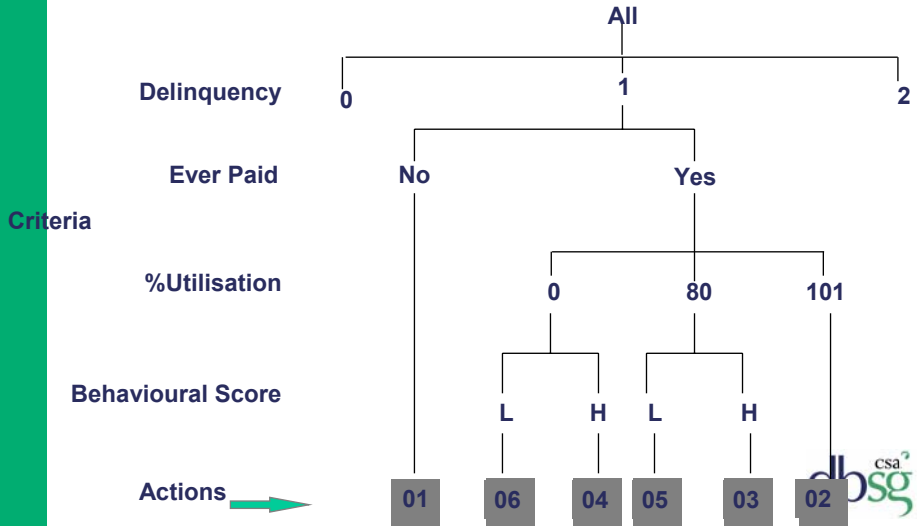
# Strategy allocation



# Strategy allocation



# Strategy allocation



# Champion / challenger

	Champion	Challenger
Account enters Collections	10 dpd	10 dpd
Letter 1 sent	15 dpd	
Statement message	25 dpd	25 dpd
Letter 2 / 1 sent	38 dpd	34 dpd
Enters Power dialler	45 dpd	45 dpd

## Where models are most effective

- Anywhere a decision is required:
  - Take an action
  - Allocate accounts

## Where models are most effective

- Stages e.g. :
  - Collections Entry
  - Early Arrears
- Decision Points
  - Default
  - Repossess
  - Litigation
- Actions e.g. :
  - 'Cheques in the post'
  - Debt sale...

## Better Systems

- Traditionally decisions have been based on:
  - Scorecards
  - Segmentation
  - Policy rules
  - Desperation

## New Thinking

- Alternative model
- Better identification of Sale prospects
- Better integration of decisions within systems

## Alternative model

- Model the successful actions

Imagine the simplified history of a client is:

Letter – pay

Letter – no pay

Call – pay

Call – no pay

Call – no pay

Home visit – pay



## What should the next action be?

- Apply to a similar client with a similar history...

The similar client's history is:

Letter – pay

Letter – no pay

Call – pay

Doesn't  
pay



Home visit

Next recommended action



# Better Systems

- Calculation of the 'value' to the business: to sell or hold
- Continuous reassessment rather than one off
- Provide potential user interaction
- Middleware – so implementable as a wrapper to legacy systems



## User sees the 'value'

The screenshot shows a software interface for a customer named Mr Joseph MacLennan. The interface is divided into several sections:

- Common Tasks:** Write a letter, Write an e-mail, Make a call, Schedule an action, Log to this Opportunity.
- Call out:** Mr Joseph MacLennan, Add Contact, Enter activity notes here.
- Contact Details:** Name: Mr Joseph MacLennan, Gender: Male, Address: Suite 3, 3 The Courtyard, Denmark Street, Wokingham, Telephone: 0118 756 5654, Fax: 0118 756 5655, Mobile: 07777 775 595, Email: joseph.m@gmail.com.
- Contact History:** Table with columns Date and Details. Entries: 12/12/2005: Cust. promised to make a payment next week - John V., 12/12/2005: Outbound call - John Wright.
- Account Status:** Table with columns Date, Amount, Balance, Aresars, Status. Entries: 01/12/2005: £90.00, £6493.00, £613.94, Suspended; 01/11/2005: £90.00, £6583.00, £509.84, Suspended; 01/10/2005: £0.00, £6773.00, £405.74, Not Suspended; 01/09/2005: £36.82, £6809.82, £221.64, Not Suspended; 01/08/2005: £147.20, £6957.02, £74.36, Not Suspended; 01/07/2005: £147.82, £7104.84, £37.18, Not Suspended.
- Strategy:** Active payment arrangement: no, Target strategy: Arrangement payment - £252.48, Clear arrears, Percentage settlement.
- Current position:** Low risk. To late payment, 20/12/2005: CL1 Chase 2nd call Letter, 18/12/2005: CL1 2nd call, 12/12/2005: CL1 Call to follow up letter, 08/12/2005: CL1 Letter.
- Loan Details:** Initial Amount: £7000.00, Term: 48 months, Date Taken: 17 Mar 05, Monthly Payment: £184.10, Purpose of Loan: Purchase, Agreement No.: 56113213.
- Value:** A column on the right side of the interface, highlighted in green, representing the calculated value to the business.



# Warning to sell debt ... or 'beat the system'!

Accelerator

Back Home Search SVC Activity Logging Calendar

Fri 20 Jan 06 2:23 pm

Mr Joseph Maclennan

**Contact Details**

Name: Mr Joseph Maclennan  
Gender: Male  
Address: Suite 3, 3 The Courtyard, Denmark Street, Wokingham  
Telephone: 0118 755 5554  
Fax: 0118 755 5555  
Mobile: 07777 775 595  
Email: joseph.m@gmail.com

**Contact History**

Date	Details
18/01/2006	Cust. has lost job, can't make payments - Ben Johns
12/01/2006	Called cust. Sent payment of £294.52 - Ben Johns
12/01/2006	Outbound call - Ben Johns
10/01/2006	Spoke to James at stag. Advised to go. - John Wright
10/01/2006	Outbound call - John Wright
01/01/2006	Segment 451 30

**Account Status**

Date	Amount	Balance	Arears	Status
01/01/2006	£0.00	£6393.00	£798.04	Suspended
01/12/2005	£80.00	£6483.00	£813.94	Suspended
01/11/2005	£80.00	£6593.00	£909.84	Suspended
01/10/2005	£0.00	£6773.00	£495.74	Not Suspended
01/09/2005	£36.02	£6920.00	£221.64	Not Suspended
01/08/2005	£147.28	£6963.62	£74.36	Not Suspended

**Strategy**

Active payment arrangement: no  
Target strategy: Arrangement payment - £292.34  
Clear arrears  
Percentage settlement

Route: EA\_PFI  
Score: 376  
Scorecard: ATB

**Current position**

- Low risk, 2nd late payment
- 25/01/2006: CL2 Notify debt collectors
- 03/01/2005: CL2 Letter follow-up
- 30/12/2005: CL2 Letter
- Low risk: 1st late payment

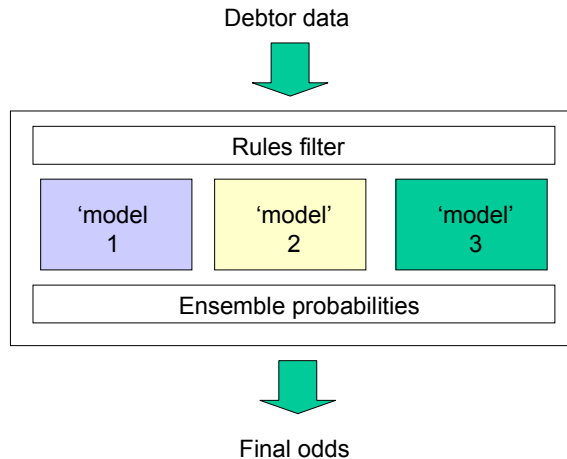
Value

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## Better Models

- Multiple modelling options
- Combination
- Bidding for best decision

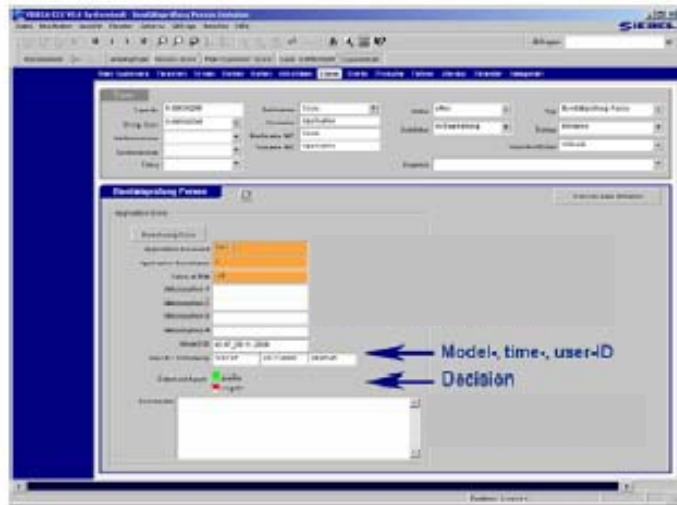
# Better Models



# Techniques and methods

- Classifiers
  - Decision Tree
    - CART
    - CHAID
    - C4.5
    - C5.0
  - Neural Networks
    - Different architectures
    - Various fitting procedures
  - Logistic regression
  - Naïve Bayes
  - Support Vector Machines
  - Bayesian Networks
- Ensemble methods
  - Weighted voting
  - Bagging
  - ADABOOST
- Survival analysis
  - Cox proportional hazards
- Regression
  - Linear regression
  - Non-linear regression
  - Ridged regression
  - Smoothing splines

# Better Models



# Conclusions

- Good data is critical
- 'It's not what you do, it's the way that you do it'
- Scoring is more widely used
- Users' input is being valued
- Decision systems are becoming smarter

Thank you

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