Perot Systems Nederland

# Data Mining for (e)-CRM

Agenda

- Key factors in CRM & e-CRM

- Importance of CRM-Analytics

- Features of Data Mining Technology

- Case of Applied Analytics

Customer Relationship Fundamental steps:

- Understand your customers:
  - What products & services they buy
  - What are their needs & behaviors
  - What is the level of current & potential profitability

- Align the organisation's capabilities to better deliver appropriate value to each type of customer.
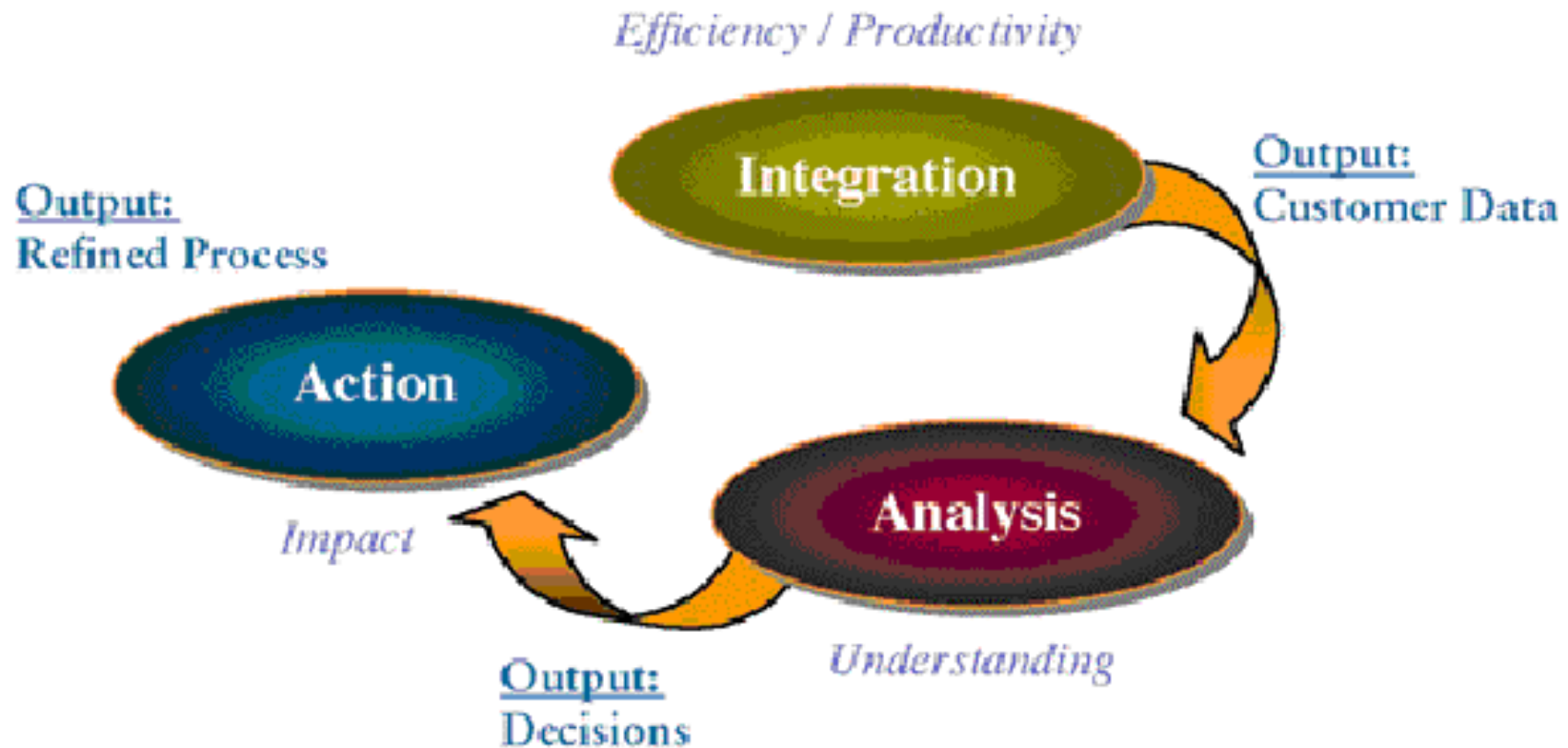
perotsystems™
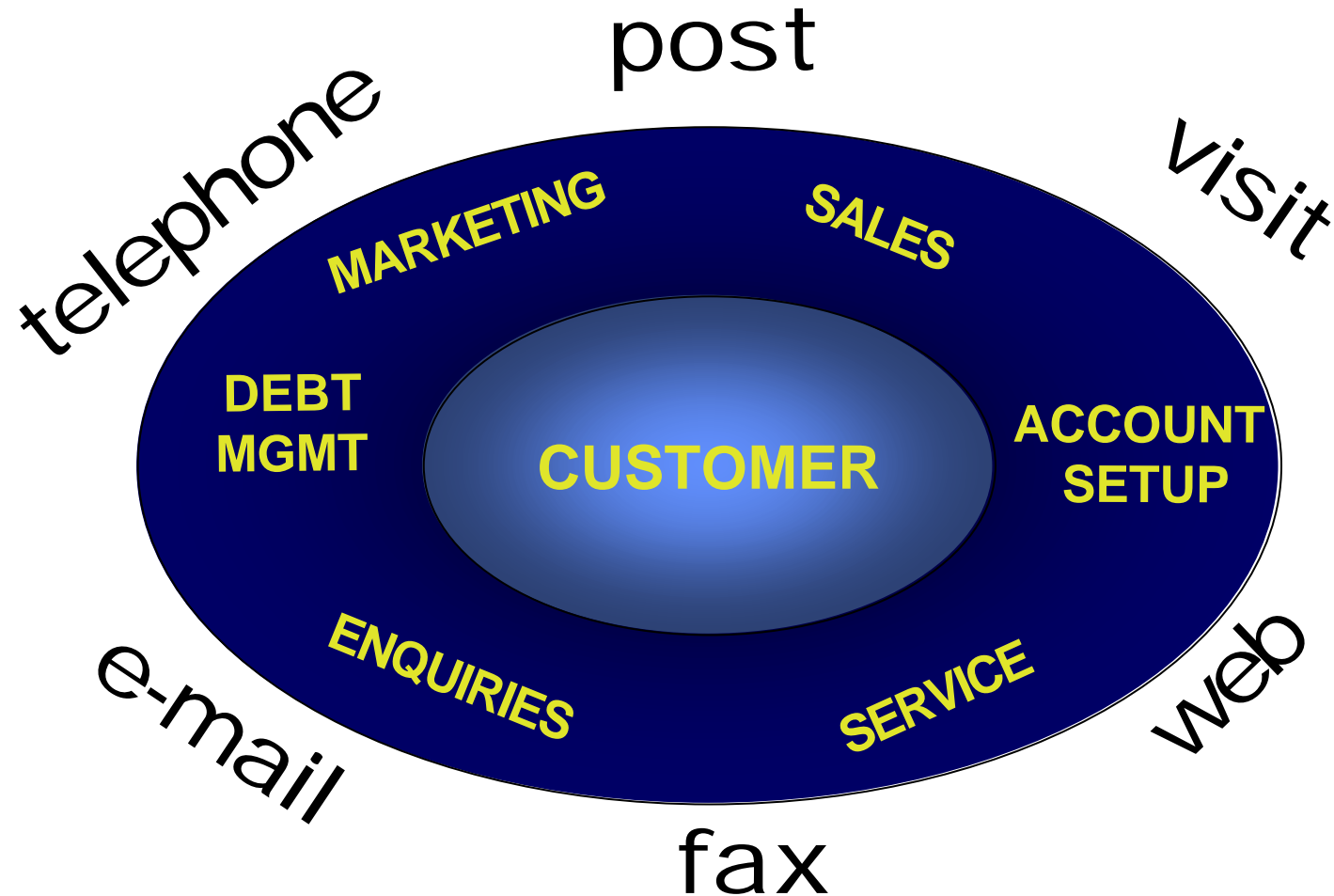
Key Factors in e-CRM

- $E = (not)$ just MC^2 ?

- Multiple Channels, with their own features, added to the already existing ones

- Create holistic view (360 degree) of Customer (gets more difficult)

- Create <u>actionable</u> business intelligence (real-time)

The Place of CRM-Analytics

Efficiency / Productivity

Integration

Output:
Customer Data

Output:
Refined Process

Action

Impact

Analysis

Understanding

Output:
Decisions

The CRM Lifecycle

Hahnke, 1999

■ Message: Look further than Integration

Basic Ideas CRM-Analytics

- "Transform the raw data from each of the operational systems and contact points into a set of customer-specific behavior measurements tailored for the business issue at hand."

- Detecting customer behavior patterns, analyzing and choosing channels to market, enhance the performance of your front line communication.

- Create complete, holistic view of each customer.

- Away from projects with internal, cost reduction focus towards projects focussed on revenue generation and increasing customer loyalty.

Importance of CRM-Analytics

- "META Group believes that a CRM initiative lacking the analytical component will fail to provide a panoramic customer view long-term. In 100% of the CRM projects we've seen that lack CRM analysis, there was a total and complete inability to effect change in the customer relationship and improve the return on the customer relationship."

Elizabeth Shahnam, Senior Program Director, Application Delivery Strategies, META Group

perotsystems™
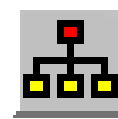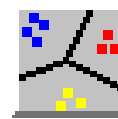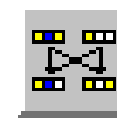
DATA MINING

What Is Data Mining?

"Simply put, data mining is used to
discover patterns and relationships
in your data in order to help you make
better business decisions."

*-- Robert Small, Two Crows*

Data Mining Technology Compared

		Search Path Determination	
		Manual	Automatic
Data Processing & Visualization	Manual	SQL	
	Automatic	OLAP/STAT	DM

- SQL: good if you know exactly what to look for.

- OLAP & STAT tools: fall short when data gets overwhelming.

- DM: ideal with the many attributes necessary for personalising customer (web)-experience.

perotsystems™

Algorithm Types

■ **Classification & Regression Trees**
  – Categorizing normally using a binary output target
  – Ability to handle large numbers of records and attributes
 – Maximum number of nodes and density functions for controlling tree size
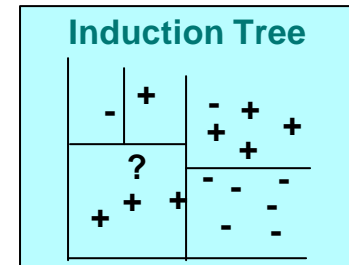
■ **Neural Networks**
  – Ability to handle non-linear relationships well
  – Works well with numeric attributes but can't handle very many attributes
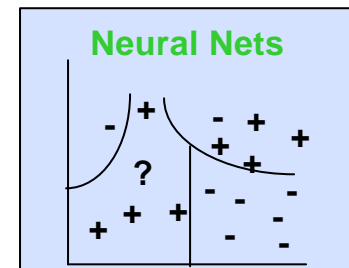
■ **_k_-Nearest Neighbors/ Clustering**
  – Classifying records on the basis of their similarity with other records
  – Distance (similarity) measure necessary
  – Ability to handle large numbers of records and attributes
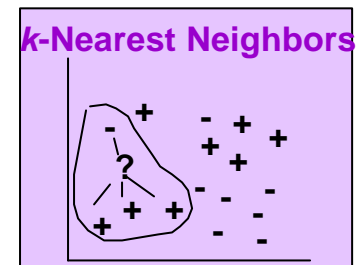
■ **Association Rules**
  – Affinities of data items (i.e. events that frequently occur together)
 – No ability to handle numeric attributes

Induction Tree

Neural Nets

_k_-Nearest Neighbors

Association Rules

A	B	C	D
0	1	0	1
0	0	0	0
1	1	1	1
1	1	1	0
1	0	0	1
1	0	0	0

perotsystems™

Data Mining Insight

Data Mining Insight:
Highly accurate
predictions of
customer behavior,
where statistical
techniques fall short

Based on: Michael J. A. Berry,
Data Miners,
http://www.data-miners.com

Decision Trees - Segmentation

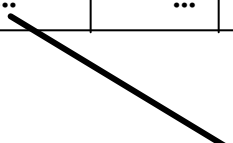CHURNERS vs. *LOYAL CUSTOMERS*

Income

Months as Customer
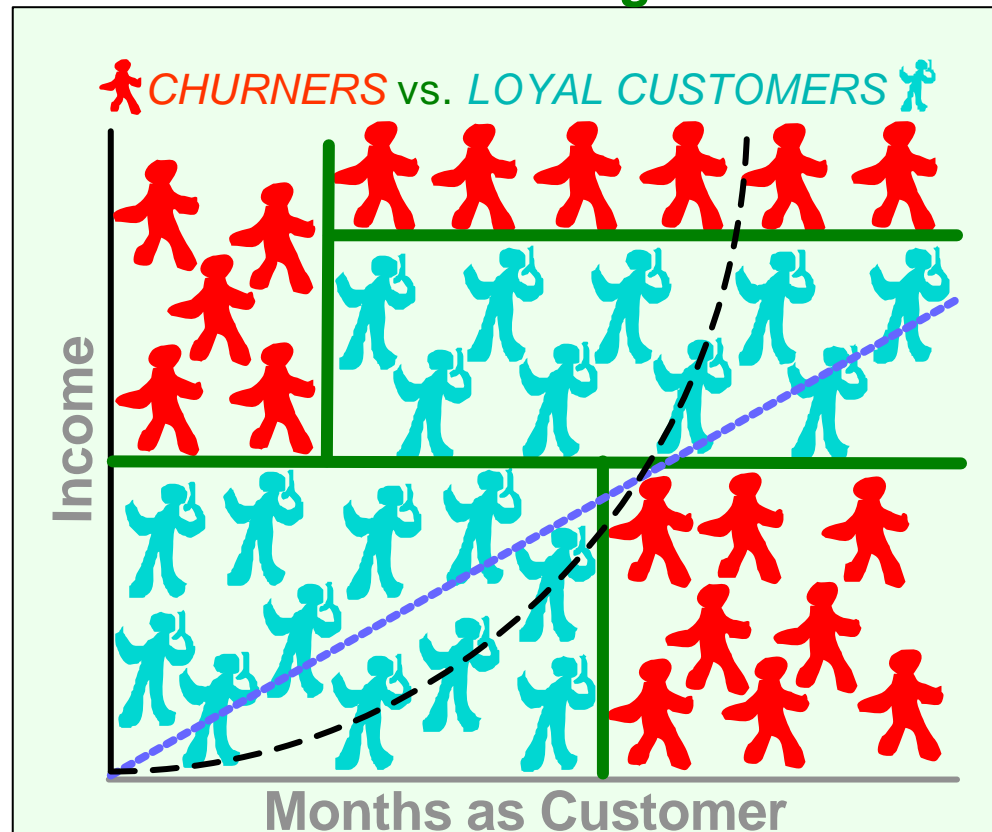
Oracle Darwin

New Directions in DM-Algorithms

- **Multi-table capability** - complex data
  - customer/account/transaction
- **Multi-record examples**
  - group of companies, collection of tests, sequence of events
- **Projects**
  - Inductive Logic Programming (ILP)
    - with SPSS, BT.. in Aladin
  - Multi-Relational Data Mining (MR-DM)
    - with Kepler, Swiss Life.. in MiningMart
  - Object-Oriented Data Mining

New Directions in DM-Algorithms

CustID	Age	Children	ProductX
1	35	1	Yes
2	45	2	No
…	…	…	…

Account	CustID	Balance
123	1	432
456	1	1987
789	2	579
…	…	…

- **Customer table and account table**
  - May be more than one account per customer

- **ILP gets rules like:**

  Propensity to buy product X if customer has ANY account with a balance of more than $1000

- **No need to calculate max. balance in advance**

SPSS Clementine™
data mining solutions

perotsystems™

Build on Data Mining Strengths
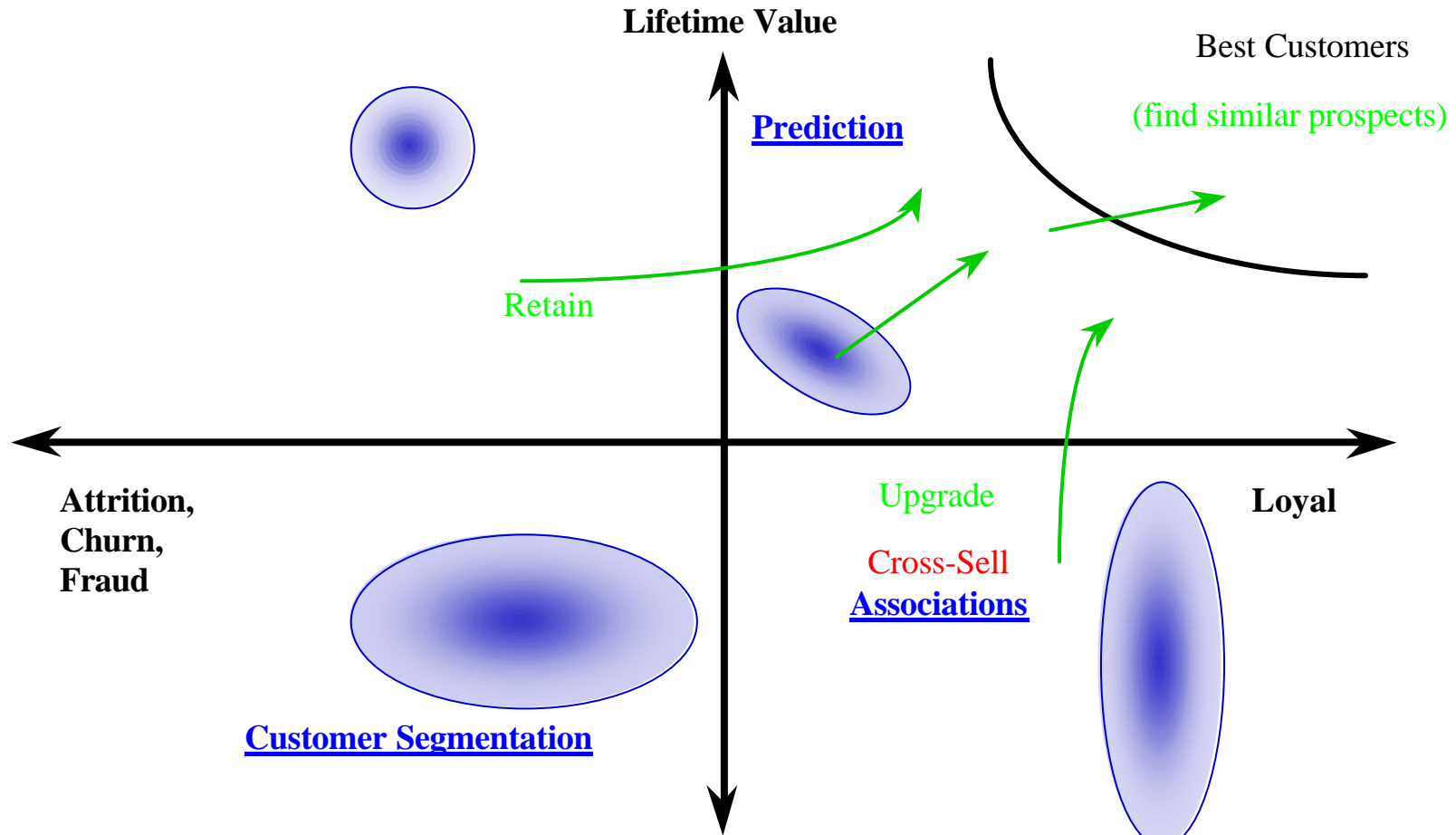
Example DM Retention Strategy
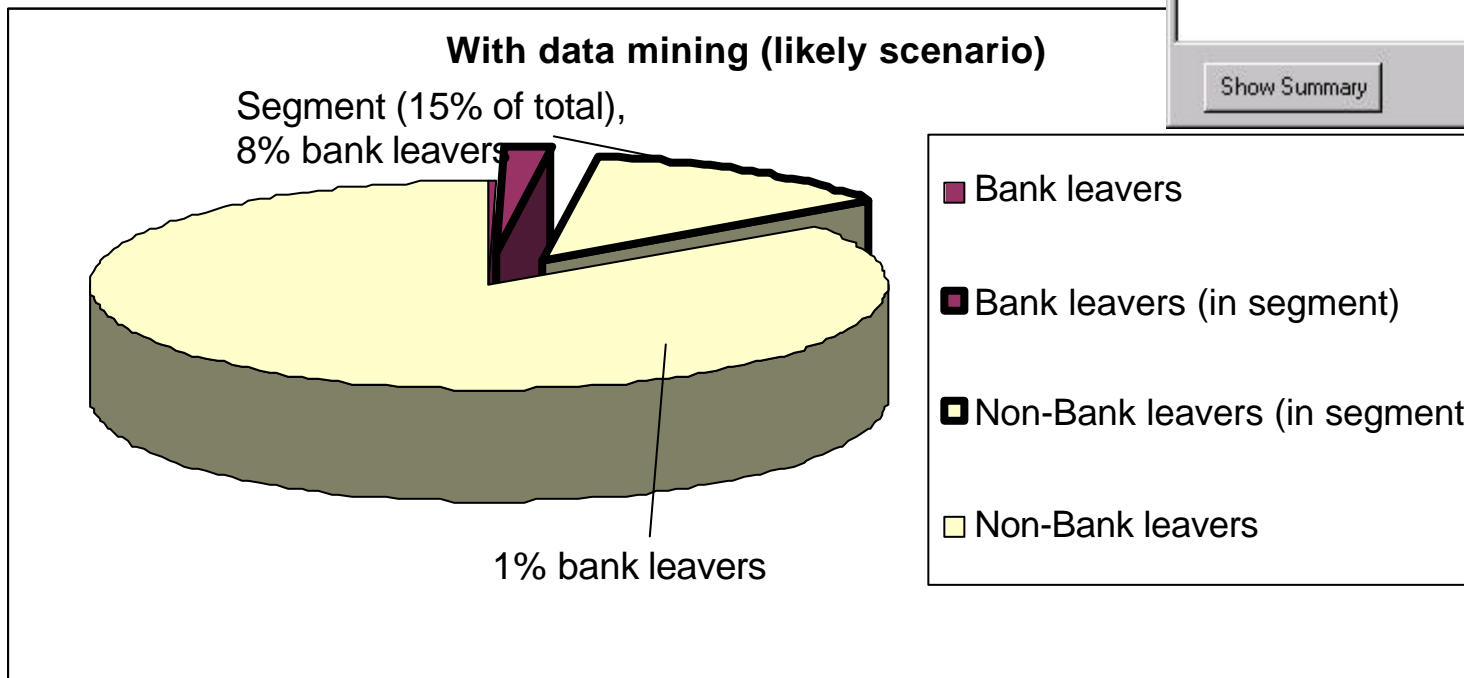
Customer Retention Strategy Bank
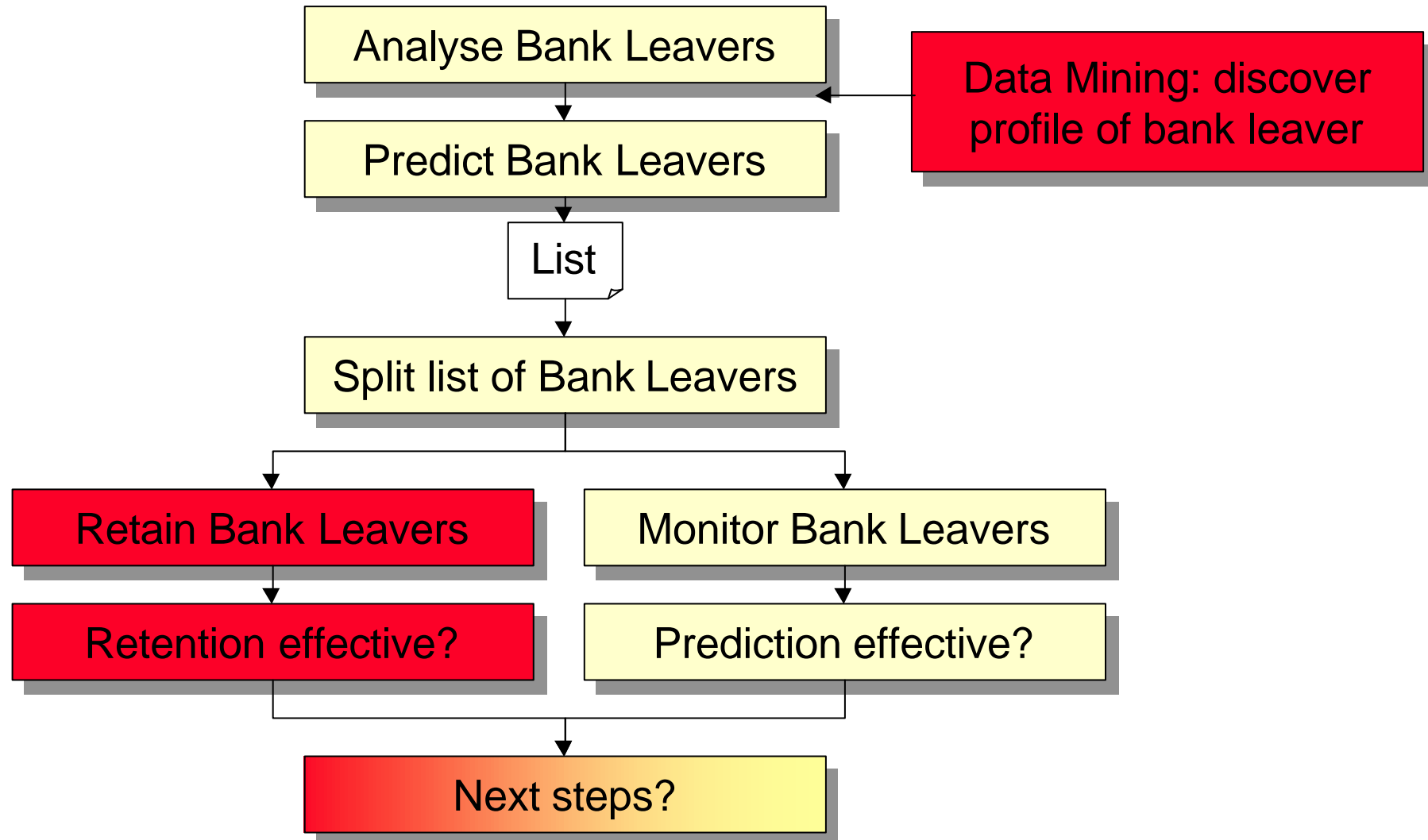
Step 1: List of prospects

Profile Description

CUSTOMER PROFILE 6
IF AVG_CHK_BAL > 0.42 AND
    NO_ACCTS > 2 AND
THEN CLOSE_ACCTS = 1
WITH *Attrition_Confidence* = 75.00%

Show Summary   Close

With data mining (likely scenario)

Segment (15% of total),
8% bank leavers

1% bank leavers

- Bank leavers
- Bank leavers (in segment)
- Non-Bank leavers (in segment)
- Non-Bank leavers

perotsystems™

Call Center Applying Data Mining

Oracle Darwin