

>> END TO END SERVICE PROVIDER
FOR CRITICAL ELECTRONIC
TRANSACTIONS

>> ELECTRONIC PAYMENT
>> FINANCIAL MARKETS
>> eCS

Atos
Worldline

HIGH-TECH TRANSACTIONAL SERVICES



Fraud Risk Management In Practice

ULB Séminaire – Questions Actuelles d'Informatique

Olivier Caelen – **Business Analytics Competence Center**

17 April 2012

Agenda

ATOS Worldline

FRM Strategy

FRM Infrastructure

Staffing

Q&A



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Atos Worldline is...



Subsidiary of
an **IT Company**

Specialized in **critical
electronic transaction
processing**

End to end
service provider

Hi-Tech Transactional Services

Hi-Tech Transactional Services

Electronic Payments

eCS
Customer, Citizen &
e-Community Services

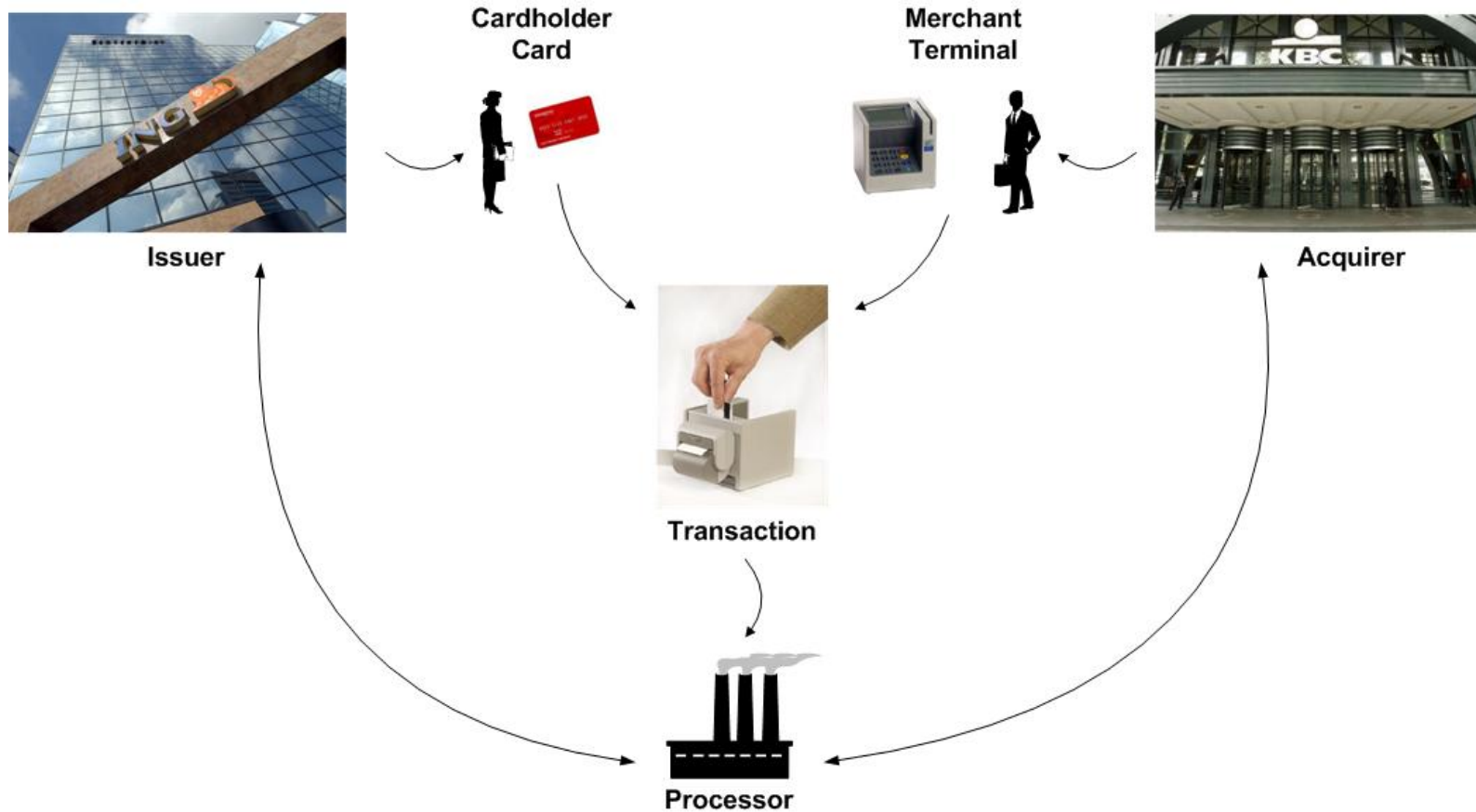
Financial Markets



Global Turnover = 844m€
4800 employees



Electronic Payments



ATOS Worldline in Electronic Payments



Payment Acquiring

- » 275 million remote payment
- » 2 billion acquiring transactions
- » 147 million withdrawals
- » 130 million Mon€o/Proton transactions
- » 38 million mobile phone prepaid transactions
- » 400 000 terminals

Payment Issuing

- » 12 million debit cards
- » 12 million credit cards
- » 6 million fuel cards
- » 41 million loyalty cards
- » 3 million hits in our call centres
- » 50 million holders on Access Control Server



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FRM Strategy

- Awareness
- Technical infrastructure
 - EMV
 - 3D-Secure

- (Mass-) blocking
- Cardstop
- Chargeback

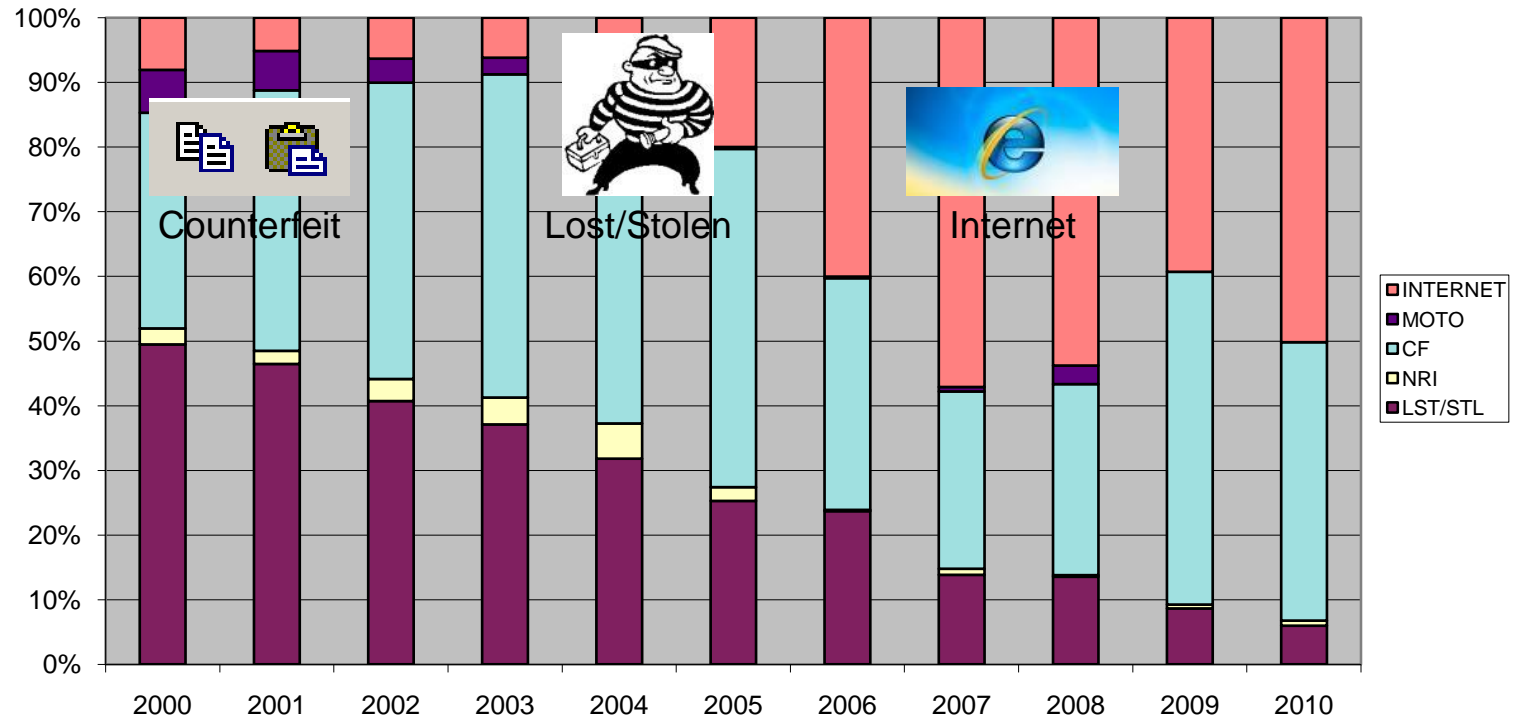


- Transaction scoring
- Case investigation

FRM Strategy In Practice

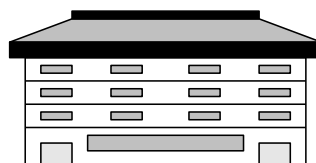


Breakdown by Fraud Type (Credit - Issuing)

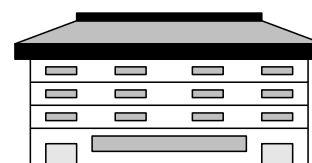


FRM Detection Strategy

- Centralization
- Independence
- Embedded flexibility



Issuer



Acquirer



Counterfeit



Lost/Stolen



Internet

FRM Detection Strategy In Practice

➤ Skimming Detection



Skimming



Skimming



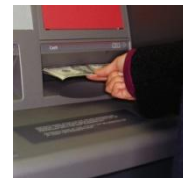
Skimming

2002



Abuse

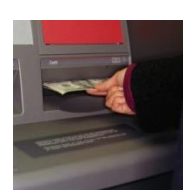
2004



Abus



2007



Abus



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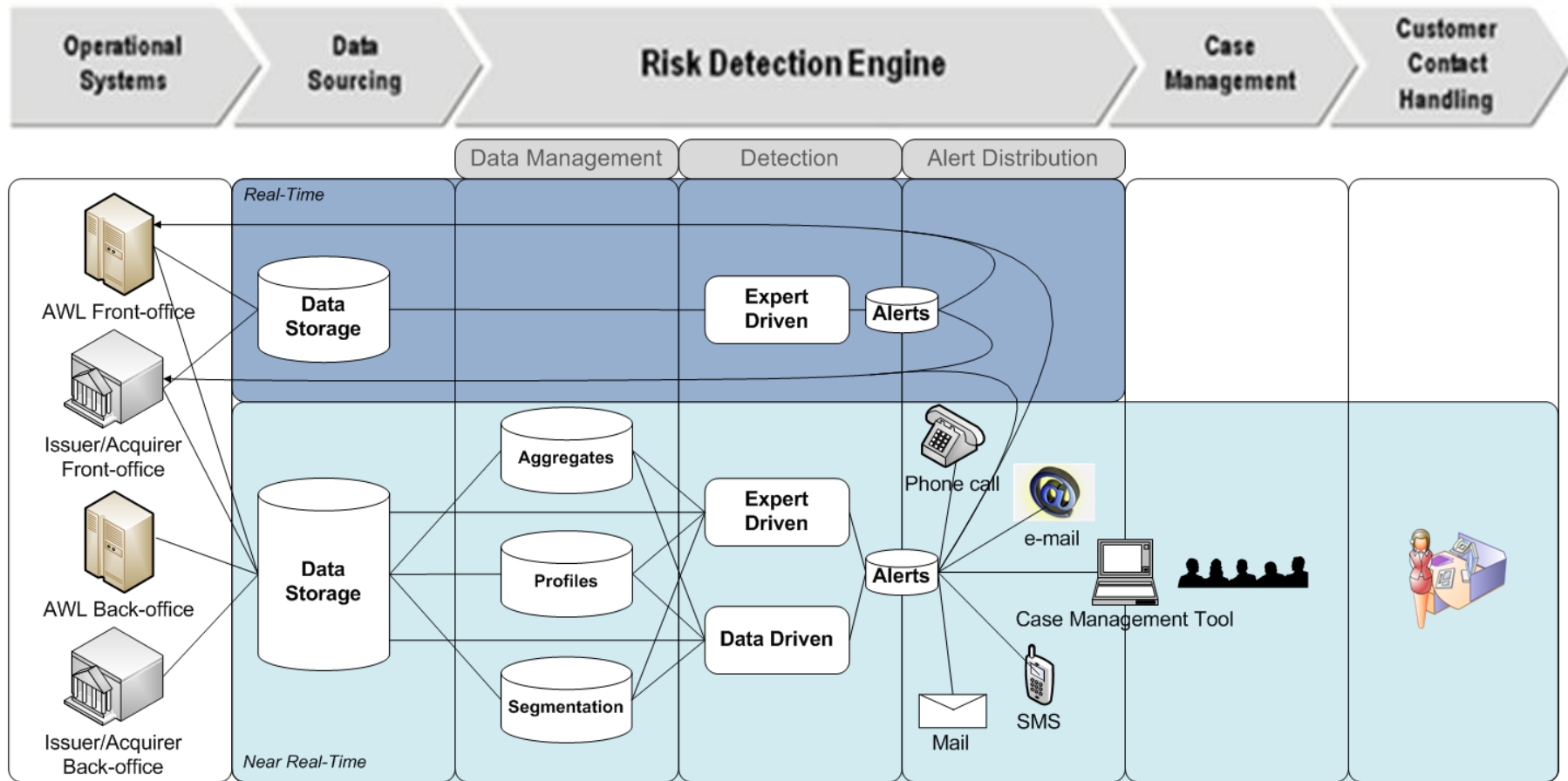
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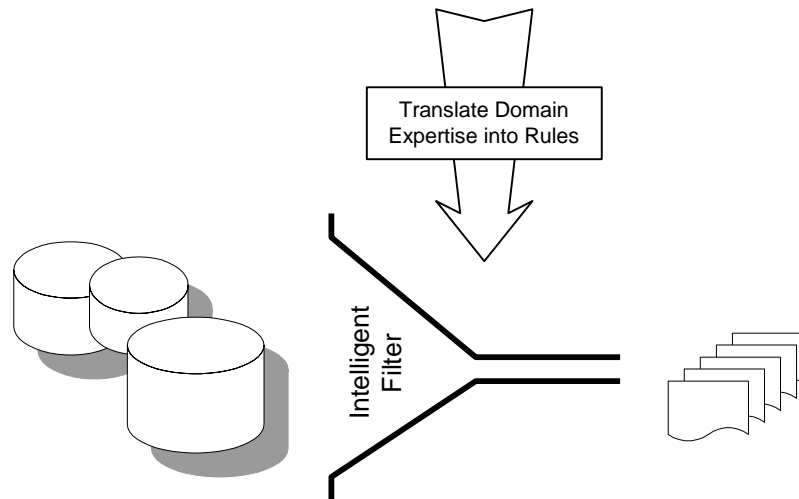
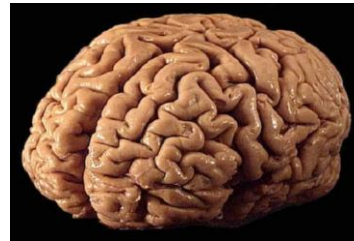
Q&A



FRM Infrastructure



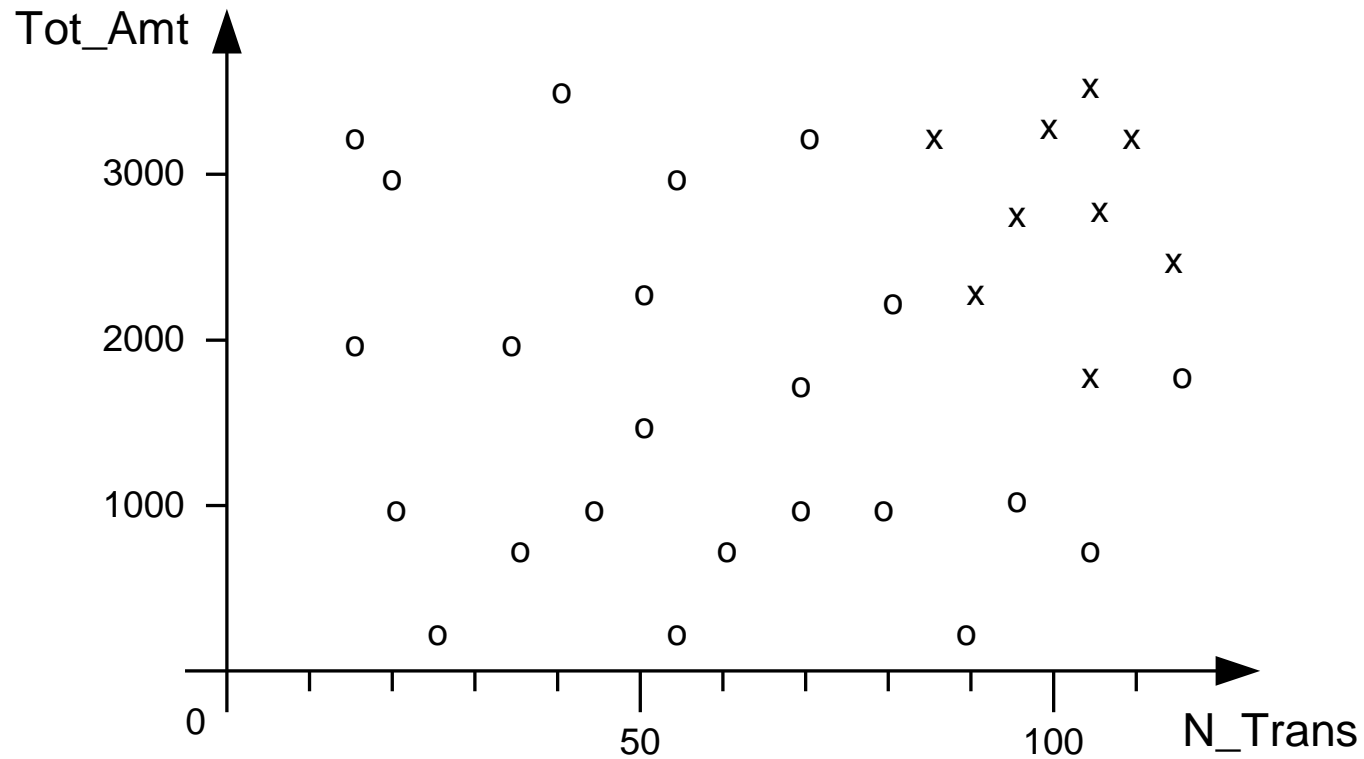
Expert Driven Fraud Detection



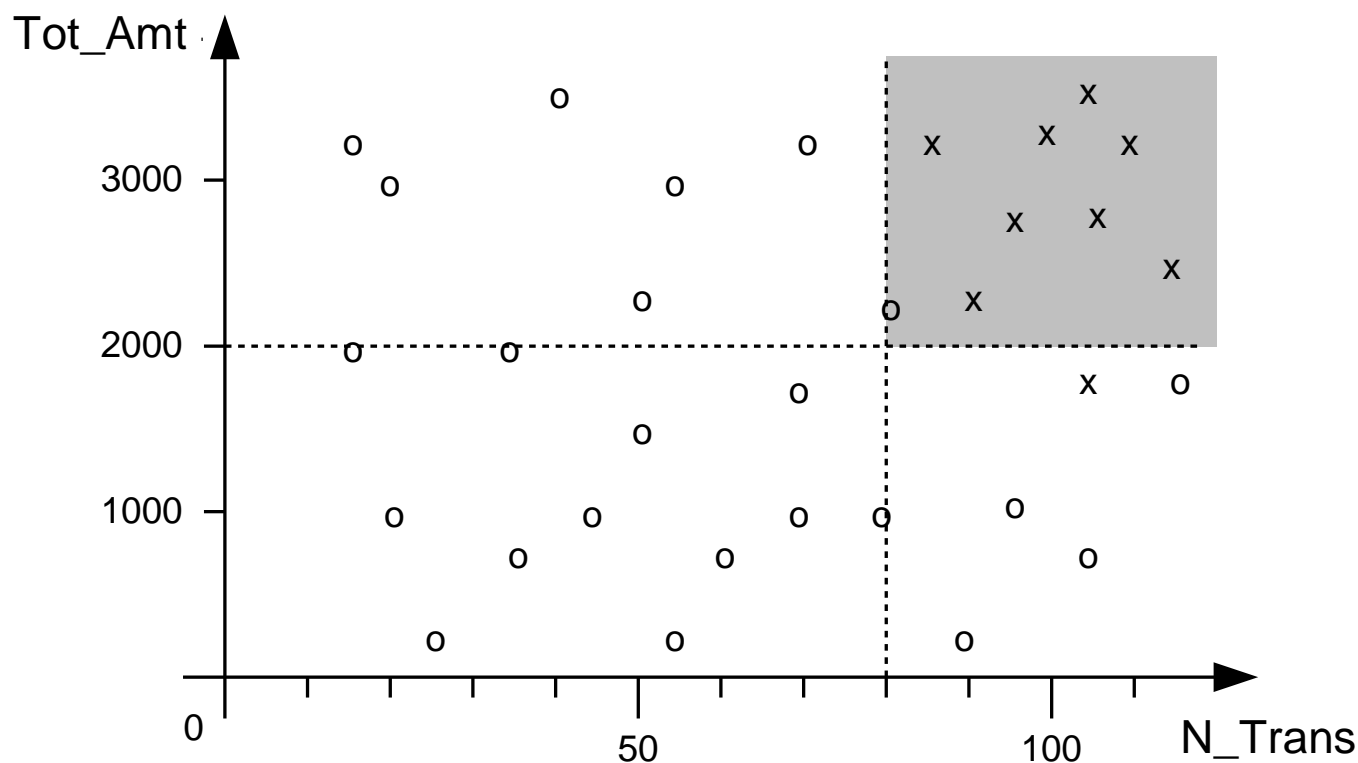
Daily Average: 170.000 people
use their Credit Card.

Daily Average: 17 Fraud Cases.

Expert Driven Fraud Detection - Approach



Expert Driven Fraud Detection - Approach

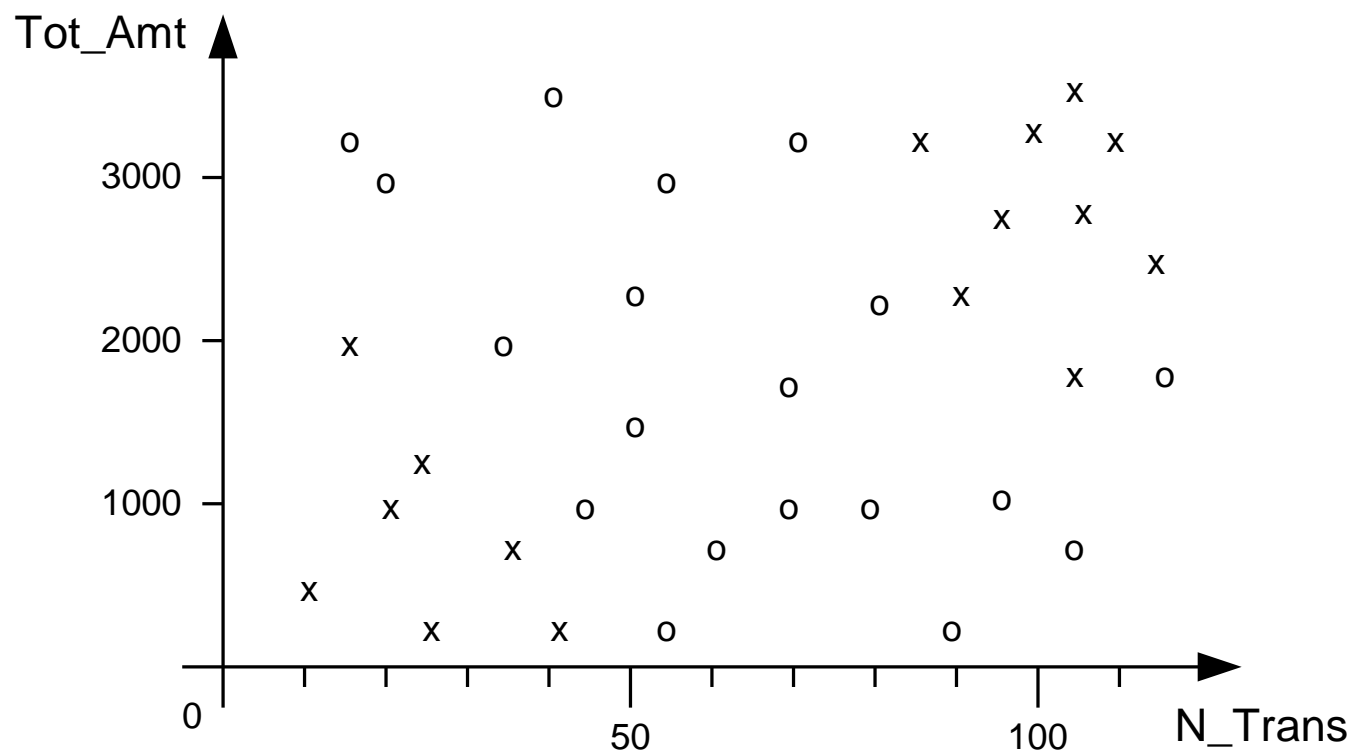


» If $N_Trans > 80$ and $Tot_Amt > 2000$ then 'x'

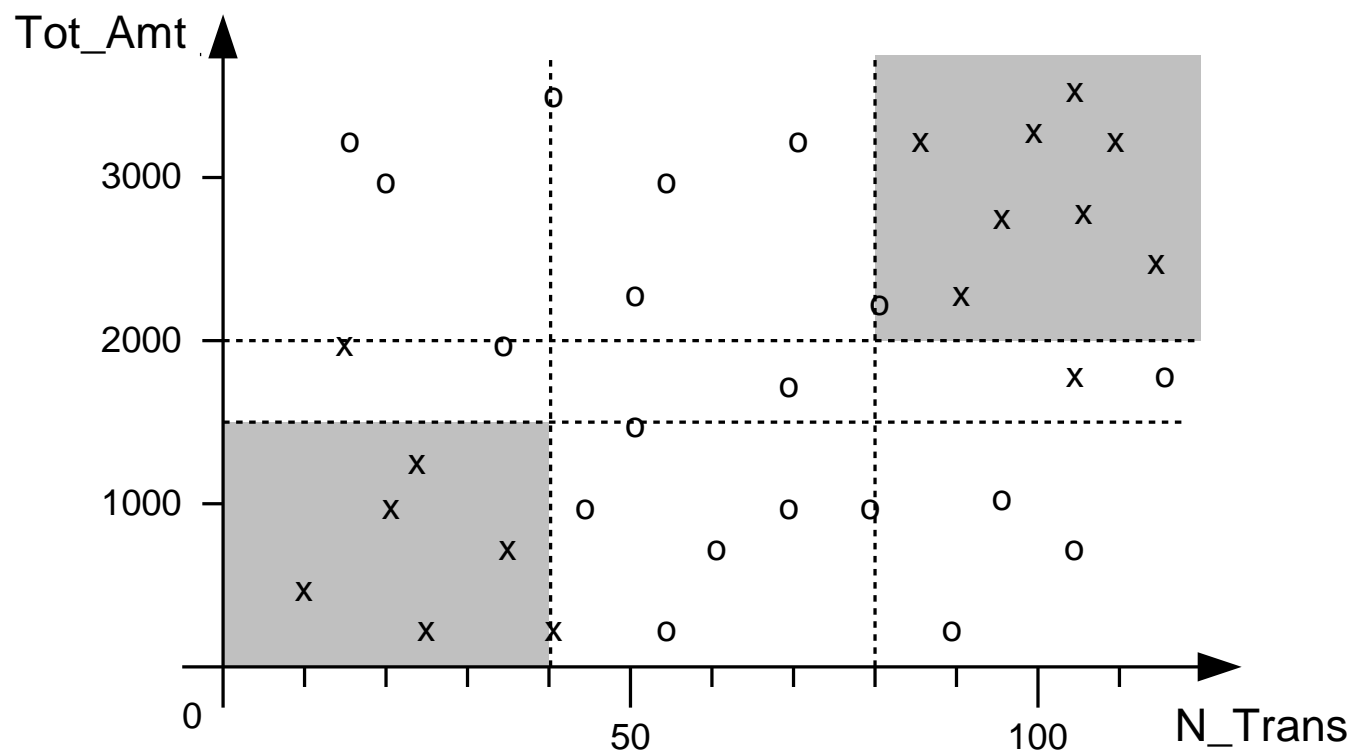
Expert Driven Fraud Detection – Advantages and Limitations

- » Advantages
 - › Fast development
 - › Easy to understand
 - › Explain why an alert was generated
 - › Exploit Domain Expert knowledge
- » Limitations
 - › Ask 7 experts, get 7 opinions
 - › Hard boundaries
 - From Tot_Amt = 10 to Tot_Amt = 1.990 changes nothing
 - From Tot_Amt = 1.990 to Tot_Amt = 2.010 changes everything
 - › Space is 'boxed'
 - › Humans have difficulties thinking in more than 3 dimensions

Expert Driven Fraud Detection – Limitations, less easy

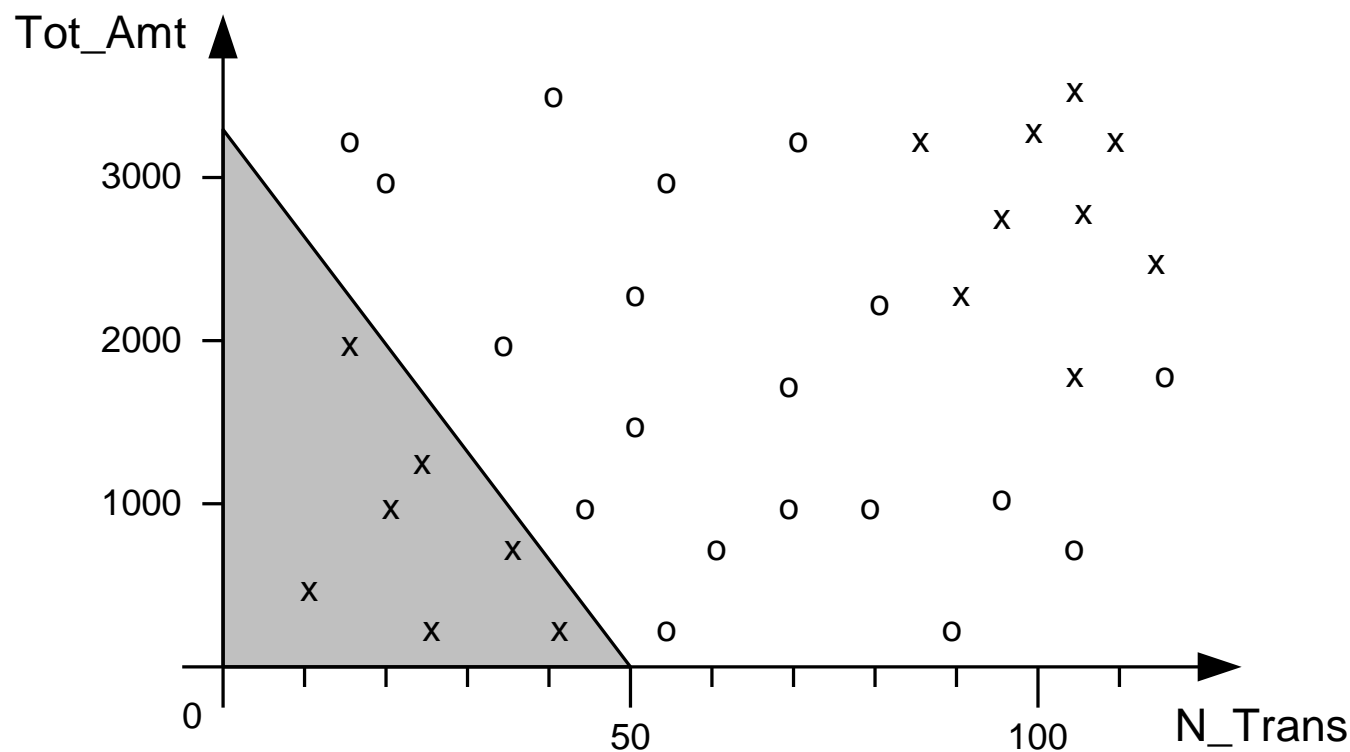


Expert Driven Fraud Detection – Limitations, less easy

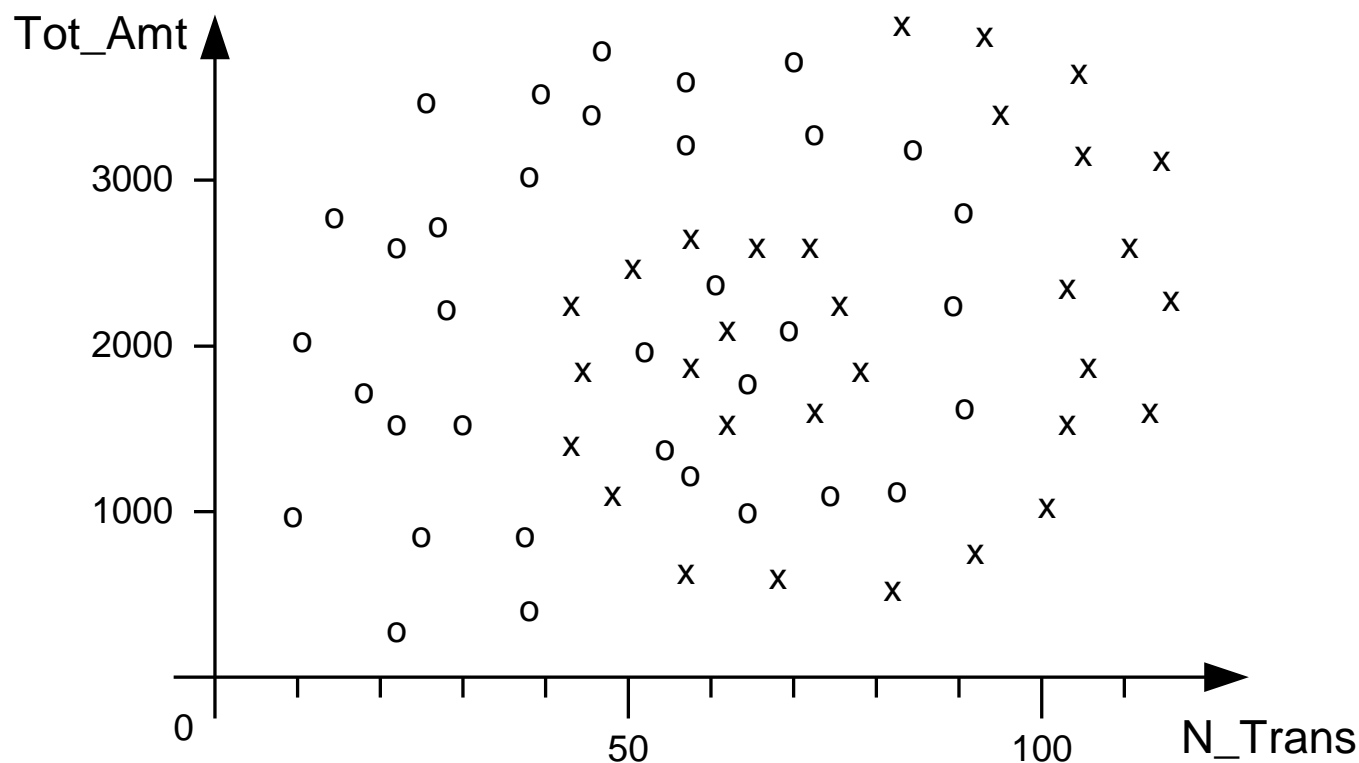


- If $(N_Trans > 80 \text{ and } Tot_Amt > 2000)$ or $(N_Trans < 40 \text{ and } Tot_Amt < 1500)$ then 'x'

Expert Driven Fraud Detection – Limitations, less easy



Expert Driven Fraud Detection – Limitations, hard

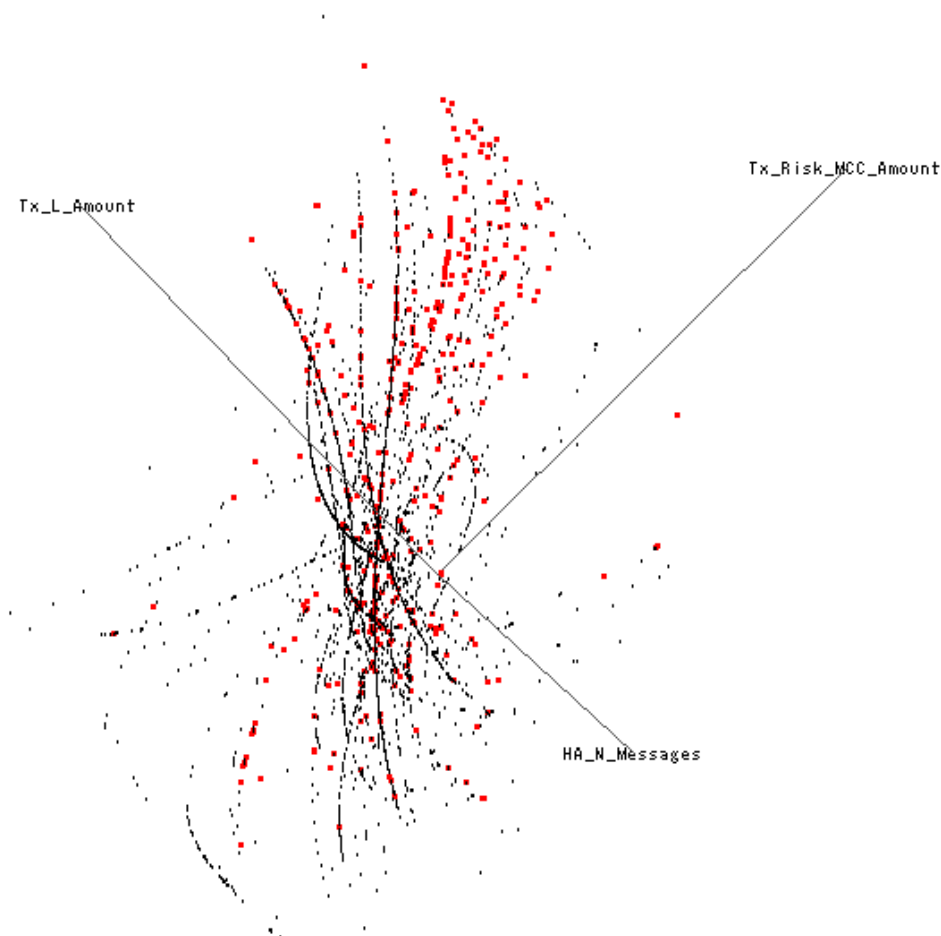


Expert Driven Fraud Detection – Limitations, hardest

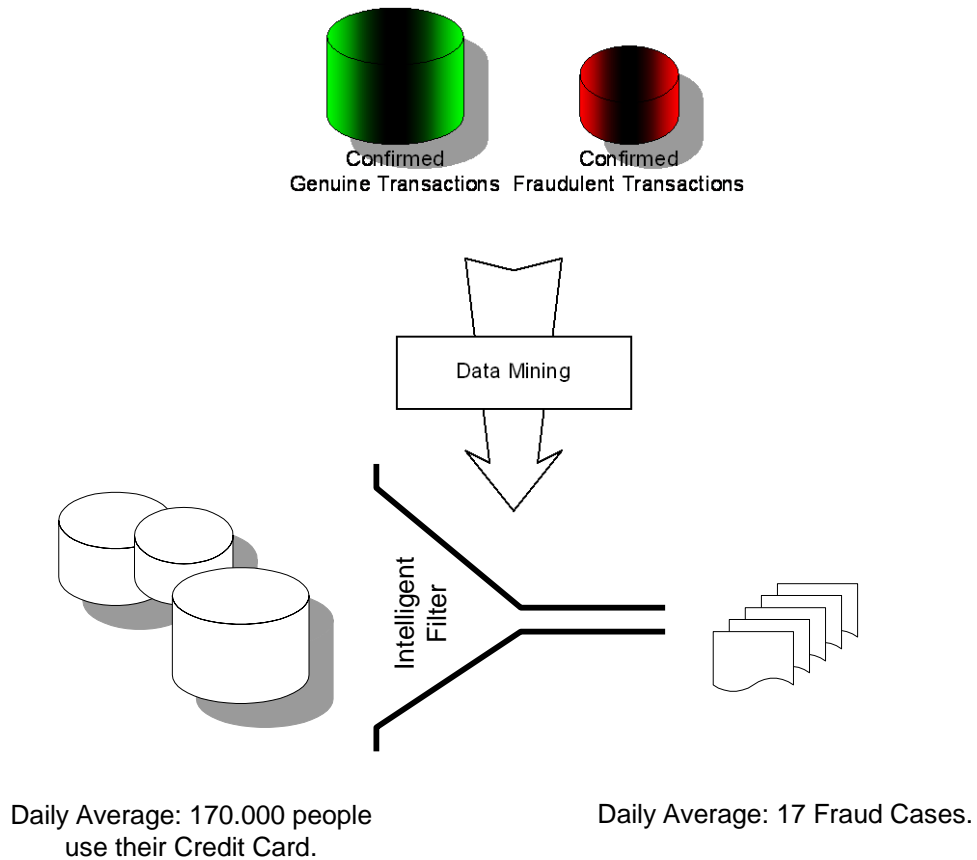
» Think of the previous shape in 6 dimensions.

The Fraud Detection Problem

- » Fraud behaviour is complex



Data Driven Fraud Detection



Data Driven Fraud Detection – Data Mining

- » 'Data'
 - › Large volumes
 - › Complex, high dimensional
- » 'Mining'
 - › Actionable information
 - › Obscure, difficult to uncover

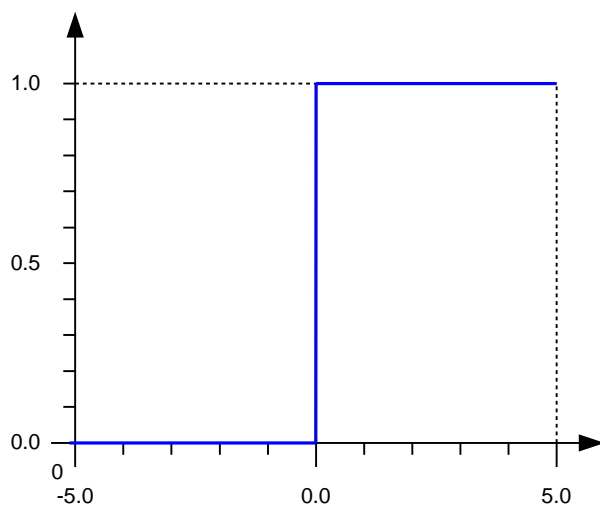
↪ Extracting actionable information from large volumes of data

- » In our case: Use historical information as examples to build a model that distinguishes between fraud and genuine examples. Score new information with the model to estimate the probability of fraud.

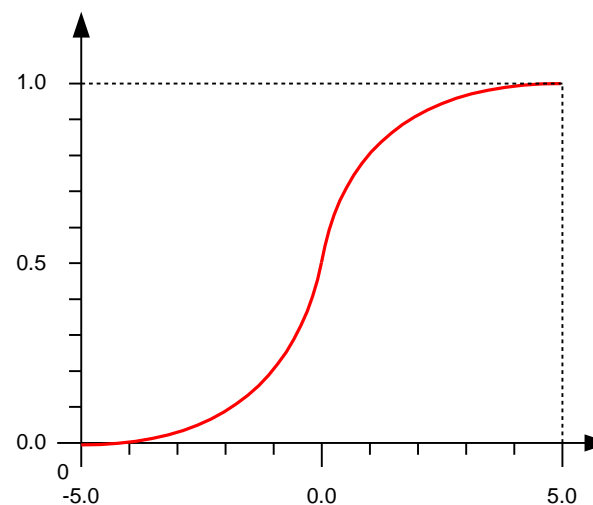
Data Driven Fraud Detection – Advantages

» Advantages

- › Optimal model based on all available cases
- › Robust, i.e. their response is smoother than rules



Rules



Neural Network

Data Driven Fraud Detection – Advantages

- » Can model complex shapes



Examples



Model

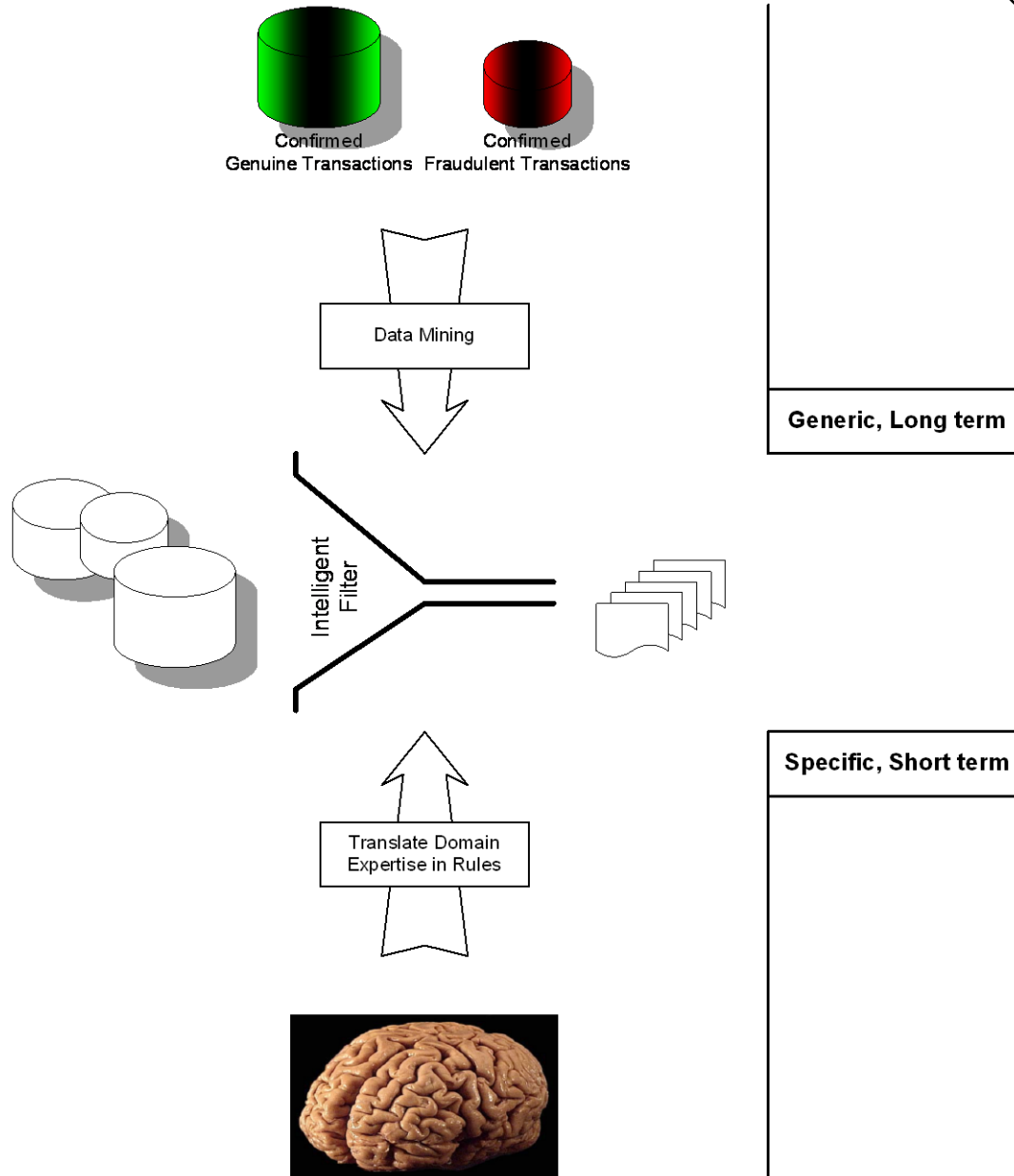
- » Scale naturally to high dimensional problems

Data Driven Fraud Detection – Limitations

» Limitations

- › Need examples
- › Development needs specialised
 - Resources (data management, data mining, domain knowledge, ...)
 - Software
 - Time
- › For some modelling technologies, no explanation why the alert was generated is available

Conclusion



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- »  The Business Analytics Competence Center
- » A small team of highly skilled professionals in
 - › Data Management
 - › Data Mining
 - › Reporting
- » Our Mission: Turn company data into value for us and for our customers

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Thank you for your attention

