



IBM Cognos Infoseminar

Predictive Analytics



- Agenda

- 9:00 Beyond BI: Mit Predictive Analytics Unternehmensentscheide optimieren
- 10:15 Pause
- 10:45 Einsatz von Predictive Analytics im Tagesgeschäft
- 12:00 Apéro



Beyond BI

SPSS - Leading in Predictive Analytics

Josef Schmid
Managing Partner
SPSS (Schweiz) AG
12.11.2010

SPSS is the Leader in Predictive Analytics



Predictive Analytics: Defined

Predictive analytics helps connect data to effective action by drawing reliable conclusions about current conditions and future events.

Predictive analytics, like enterprise resource planning (ERP) and customer relationship management (CRM), is both a business process and a set of related technologies. Predictive analytics leverages an organization's business knowledge by applying sophisticated analytic techniques to enterprise data. The resulting insights can lead to actions that demonstrably change how people behave as customers, employees, patients, students, and citizens.

The predictive analytics process begins by exploring how specific business issues relate to data describing people's characteristics, attitudes, and behavior. These numeric and free-form data sets, which originate from both internal systems and third party providers, are cleansed, transformed, and evaluated using statistical, mathematical, and other algorithmic techniques. These techniques generate models for classification, segmentation, forecasting, pattern recognition, sequence and association detection, anomaly identification, profiling, propensity scoring, rule induction, text mining, and advanced visualization.

Combining predictive analytics models with organizational business knowledge provides insight into such critical issues as customer acquisition and retention, up-selling and cross-selling, fraud detection, and outcome improvement. Through measuring uncertainty surrounding these issues, predictive analytics enables proactive risk management, refining key decision making processes through controlled, iterative testing of potential actions and their likely intended—and unintended—consequences. These findings and their corresponding business rules can then be deployed within front-line operational systems to identify new revenue opportunities, measurable cost savings, repeatable process improvements, and sustainable competitive advantages.

Predictive analytics carries strategic and tactical ramifications for organizations that recognize the inherent value locked within their existing enterprise data. Strategically, predictive analytics provides a quantitative foundation for rapidly identifying, objectively evaluating, and confidently pursuing new market opportunities. Tactically, predictive analytics identifies precisely whom to target, how to reach them, when to make contact, and what messages should be communicated.

“Predictive analysis helps connect data to effective action by drawing reliable conclusions about current conditions and future events.”

- Gareth Herschel, Research Director, Gartner, Inc., Feb. 2003



What are Predictive Analytics?



Is there a formula for the quality of a new year of Bordeaux?



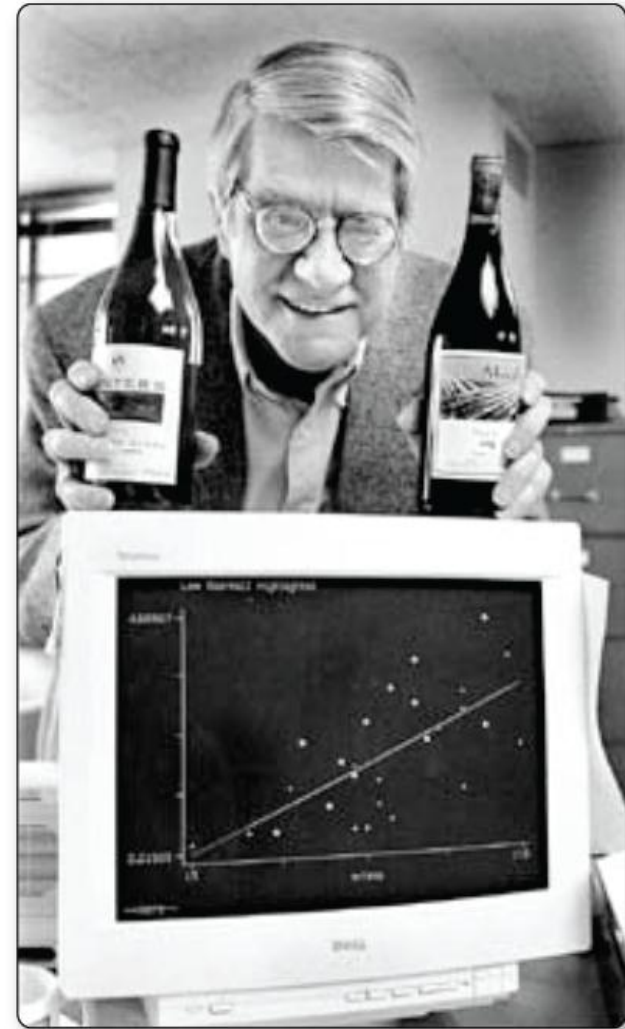
Wine Quality =

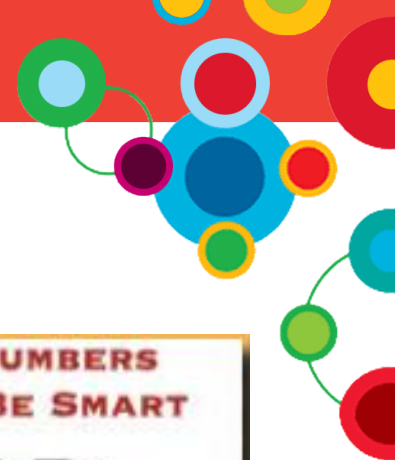
12.145

+ 0.00117 x (winter rainfall)

+ 0.0614 x (avg. growing temp.)

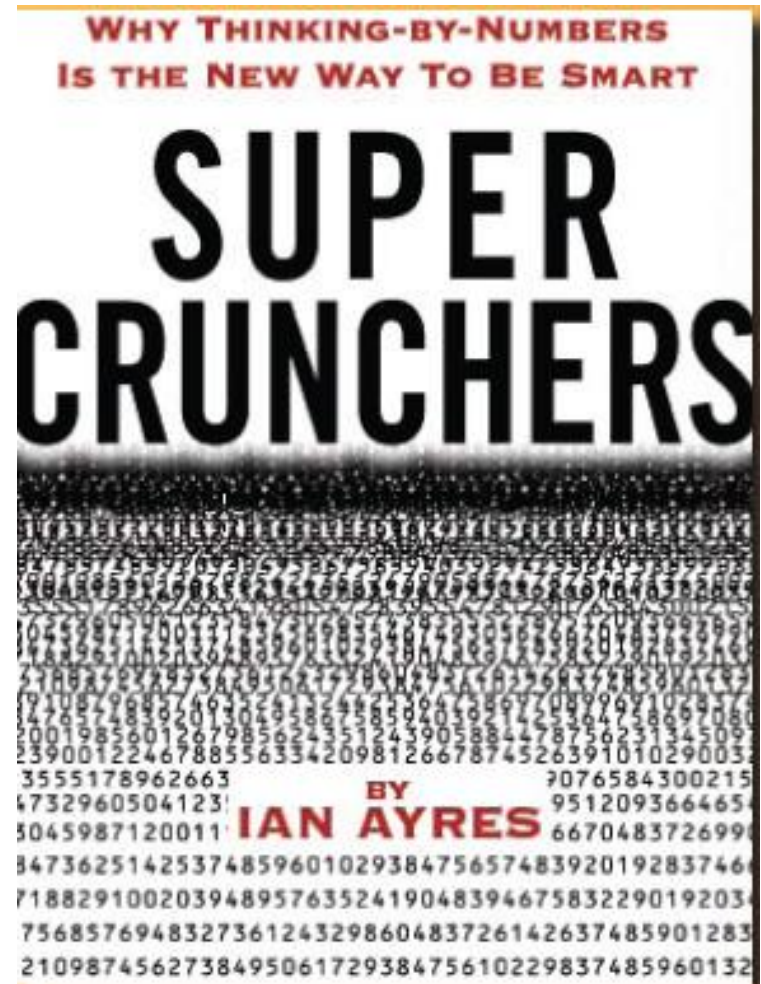
- 0.00386 x (harvest rainfall)





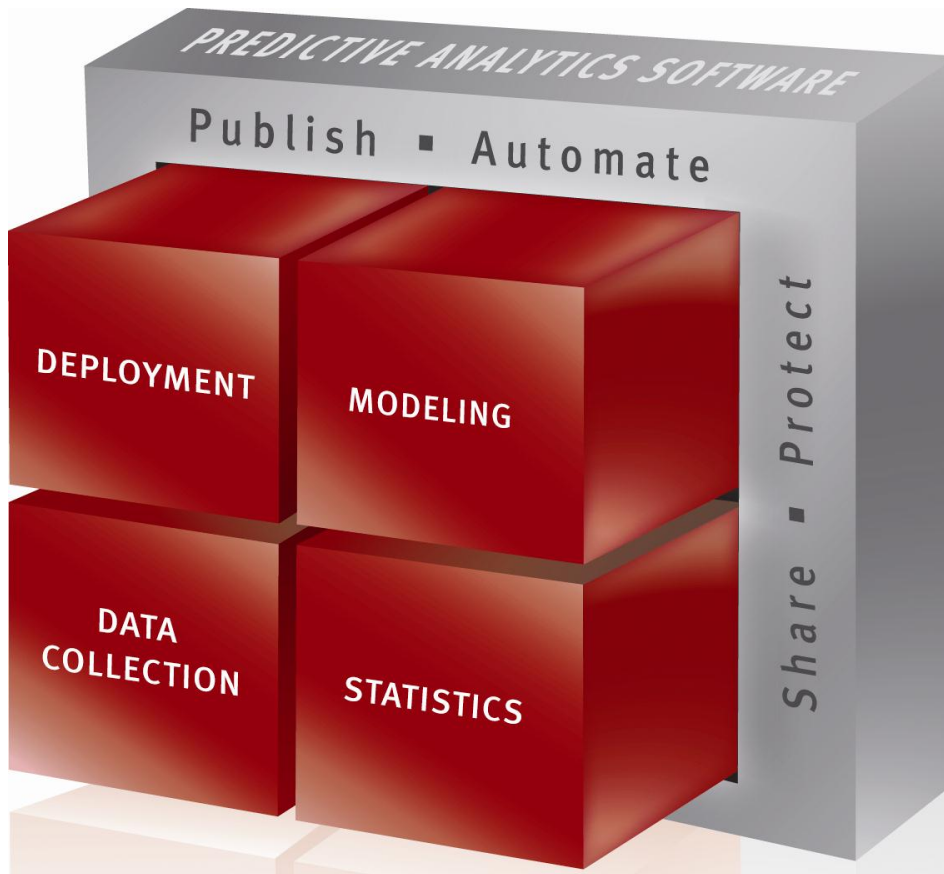
Robert Parker was not amused ...

- „A Neanderthal way of looking at wine“
- „An absolute total shame“
- „It’s so absurd as to be laughable.“



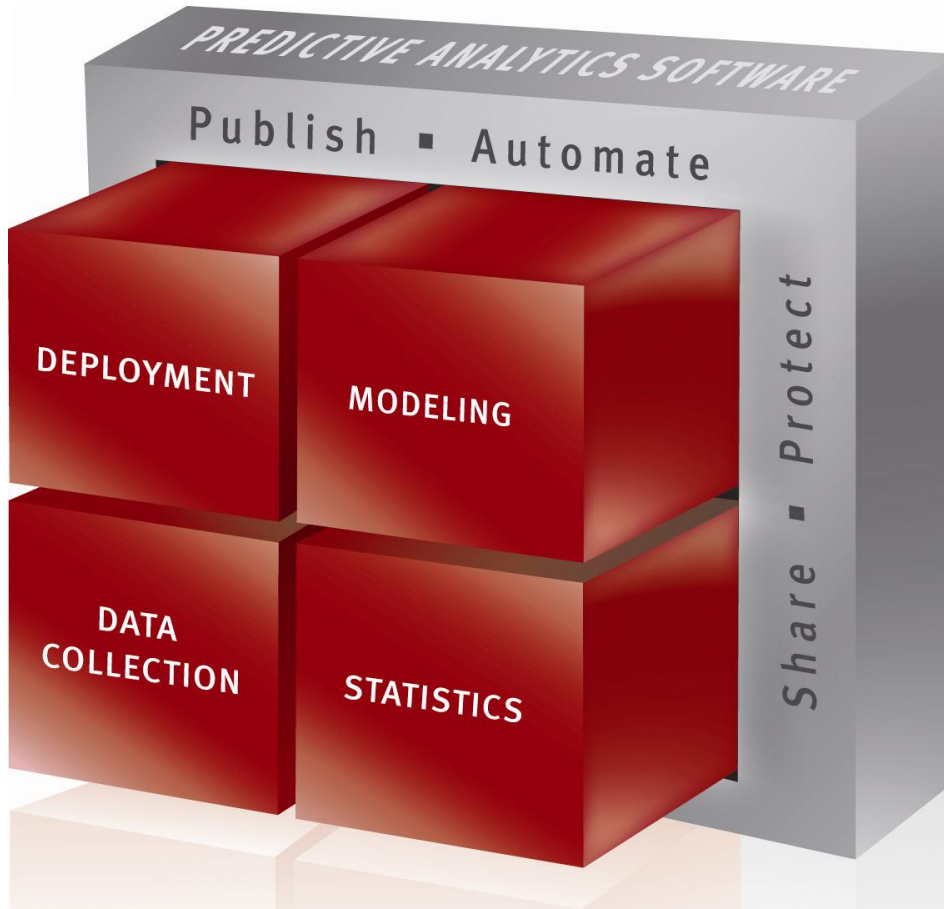


Four Families



Four Families

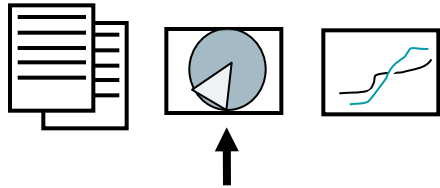
WebSphere



Changing the rules of business™



> SPSS Enterprise Plattform – a modular Ecosystem



Mail



Call Center



Internet



Branches

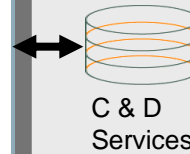
SPSS Enterprise Platform for Predictive Analytics

Understand & Predict

Reporting
Enterprise Reporting
OLAP
Showcase

Statistics

Data mining
Modeler
Model Builder



Act

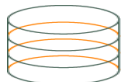
Optimization engines
Event, Interaction, Risk Control Builder

Customer surveys
Data Collection

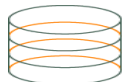
Unified Customer View

Text Mining

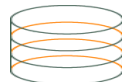
Web Mining



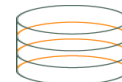
Marketing databases



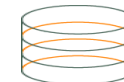
Attitudinal data



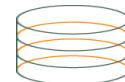
Interaction data



Webdata



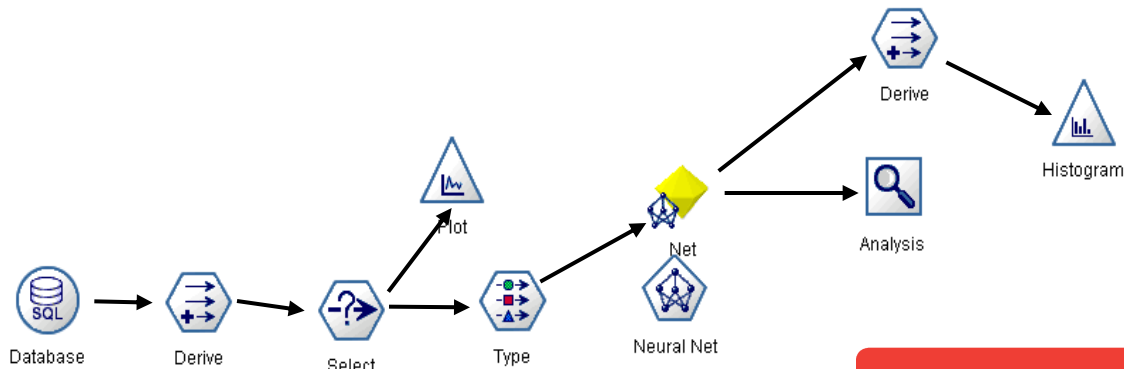
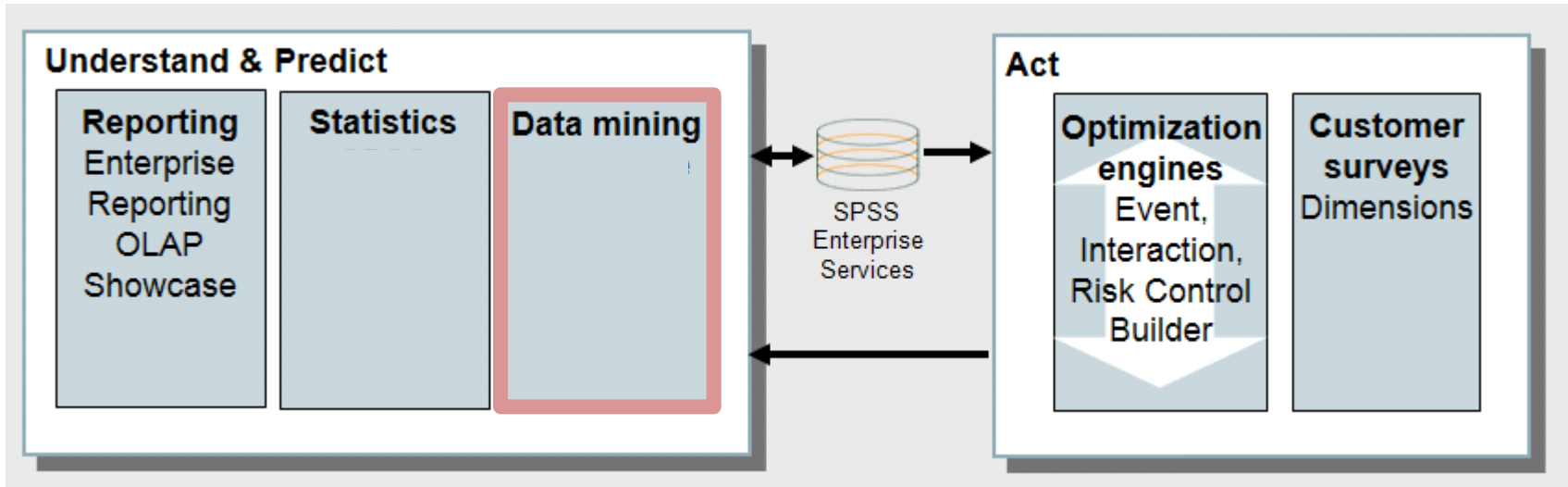
Call Center data



Operational data

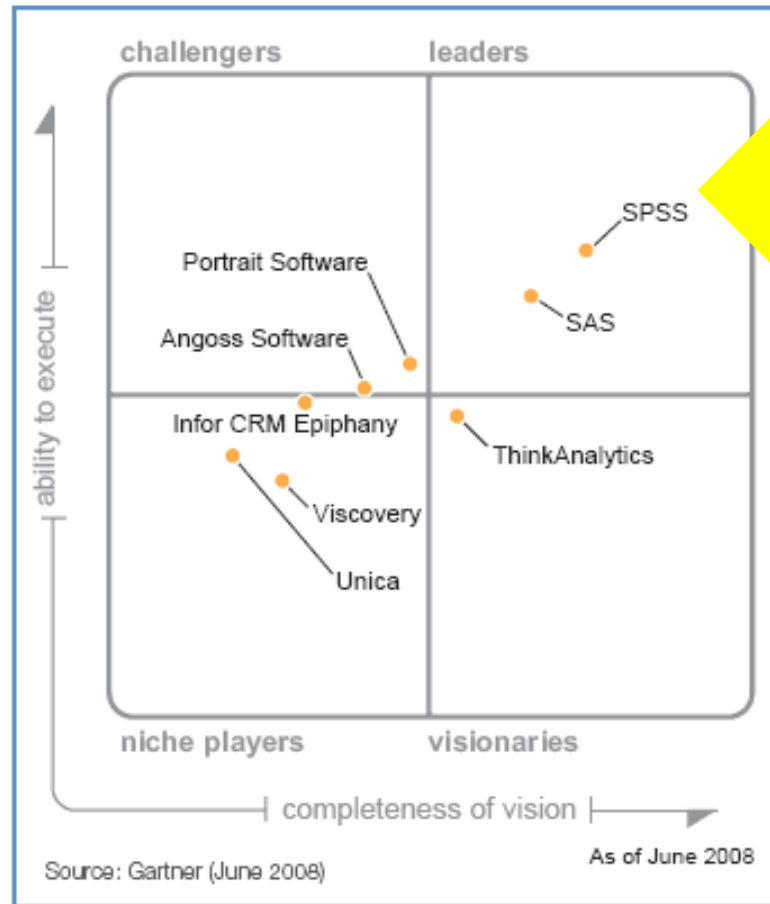


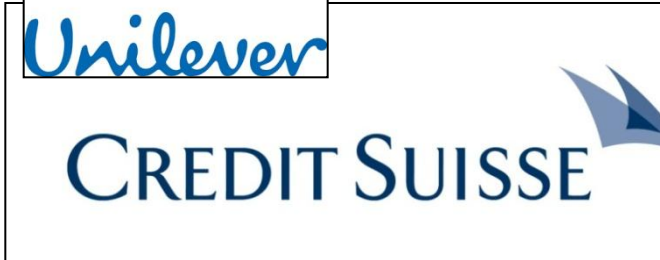
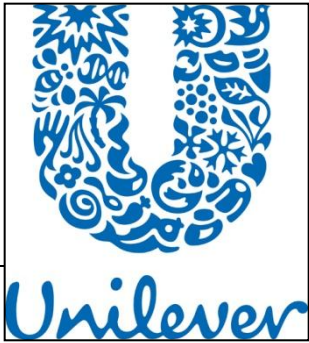
IBM® SPSS® Modeler Data Mining Workbench





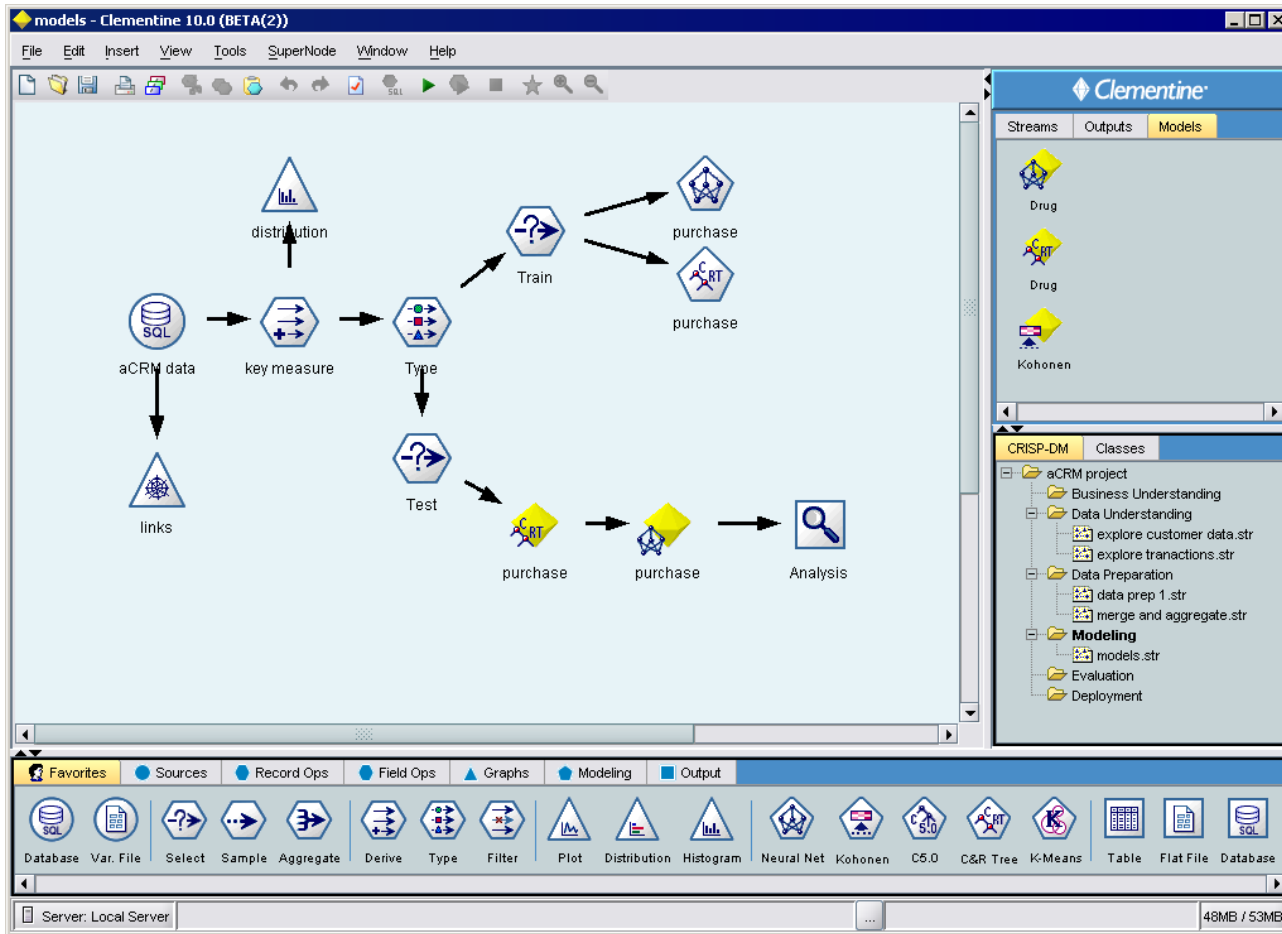
Gartner ...







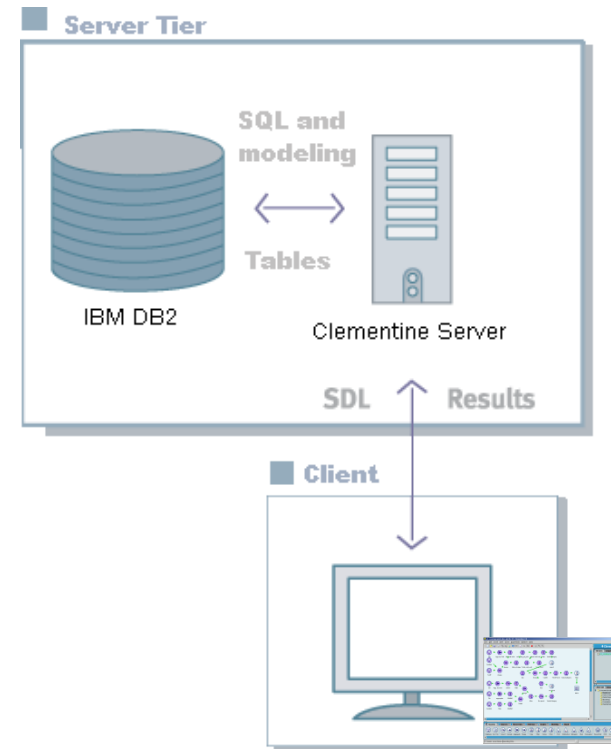
Modeler Data Mining System



Working problem oriented, focussed, quick

Modeler In-Database Mining

- Modeler 3-tier architecture
 - Client, Server, Database
- SQL Pushback
 - Translate data manipulation & scoring into SQL
 - Execute in database
- In-database modelling & scoring
 - Use database vendor's built-in data mining algorithms
 - And scoring



Modeler SQL Pushback



The screenshot displays the SPSS Clementine 7.0 software interface. The main workspace is filled with a complex network of data processing nodes. Nodes are represented by icons and labeled with their functions, such as 'SQL', 'merge', 'filter', 'Aggregate', 'select', 'DUMMY', 'key', 'CardID', 'TimePeriod', 'ValueCategory', 'no spend', and 'Table'. The nodes are interconnected by arrows indicating the flow of data. On the right side, there is a sidebar with tabs for 'Streams', 'Outputs', and 'Models'. Below this, there is a 'CRISP-DM' section with a 'Classes' tree view showing a project structure with folders for 'Business Understanding', 'Data Understanding', 'Data Preparation', 'Modeling', 'Evaluation', and 'Deployment'. At the bottom, there is a toolbar with various icons for different operations, and a status bar at the very bottom showing 'Server: Local Server' and 'Executing SQL...'. The title bar of the window reads 'p2_createpyramid_abs_sql_06_v7 - Clementine 7.0'.



- IBM SPSS Modeler 14.1



IBM Cognos BI



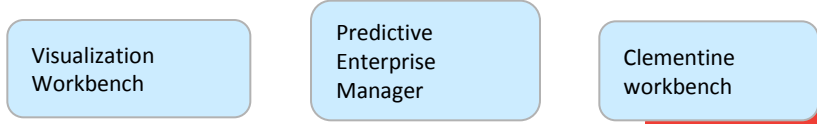
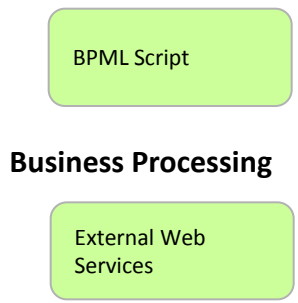
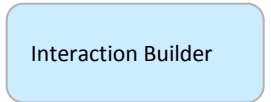
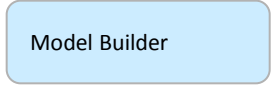
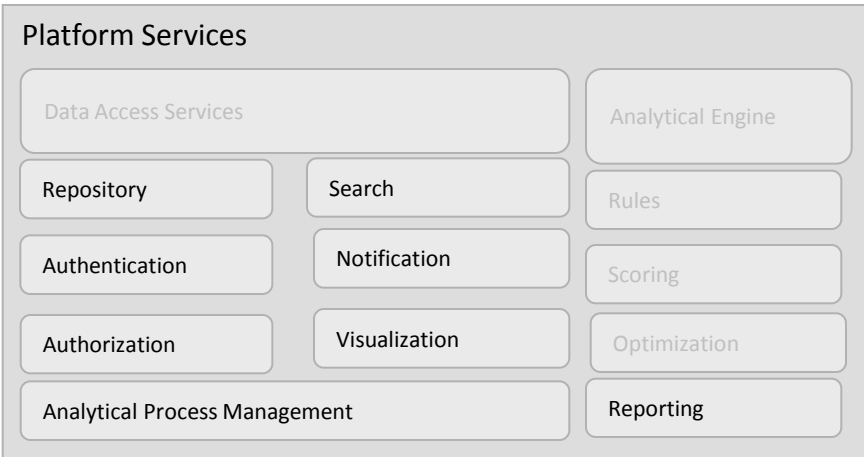
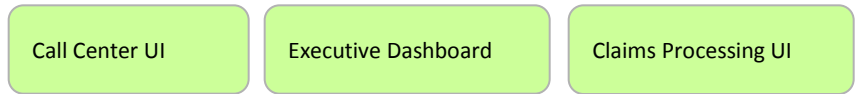
IBM Cognos BI Export



C&DS Platform – the Integration

“... a collection of generalized engines configured via metadata to solve specific business problems.”

Front Office LOB UI's



Expert User Configuration UI's



BMW and Predictive Analytics

Predictive Analytics in an industrial Environment



Enhancing the Quality of Non-Stable Production Processes

Hans W. Dörmann Osuna

Ph.-D. 

BMW Light Metal Foundry, Landshut

BMW Group



Chicago
November 2006

BMW Group plant Landshut

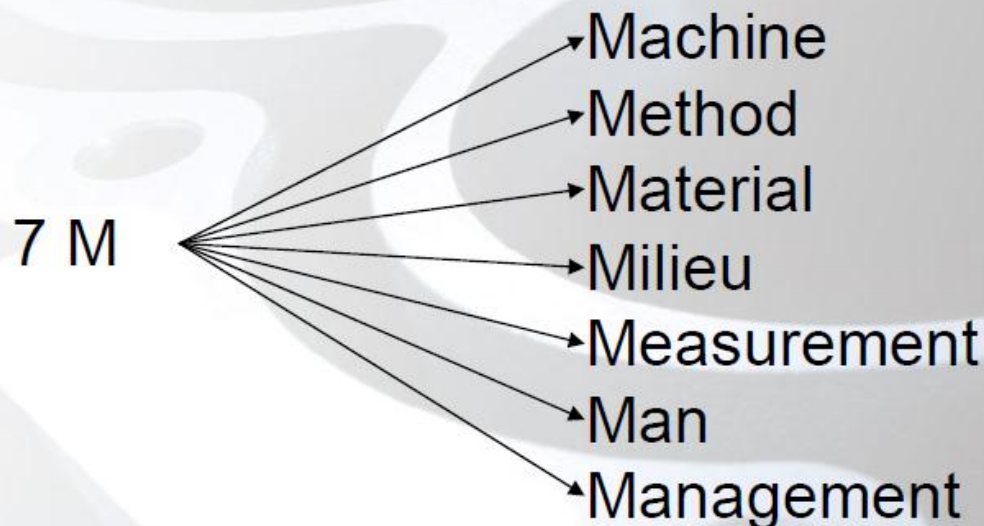
Product portfolio



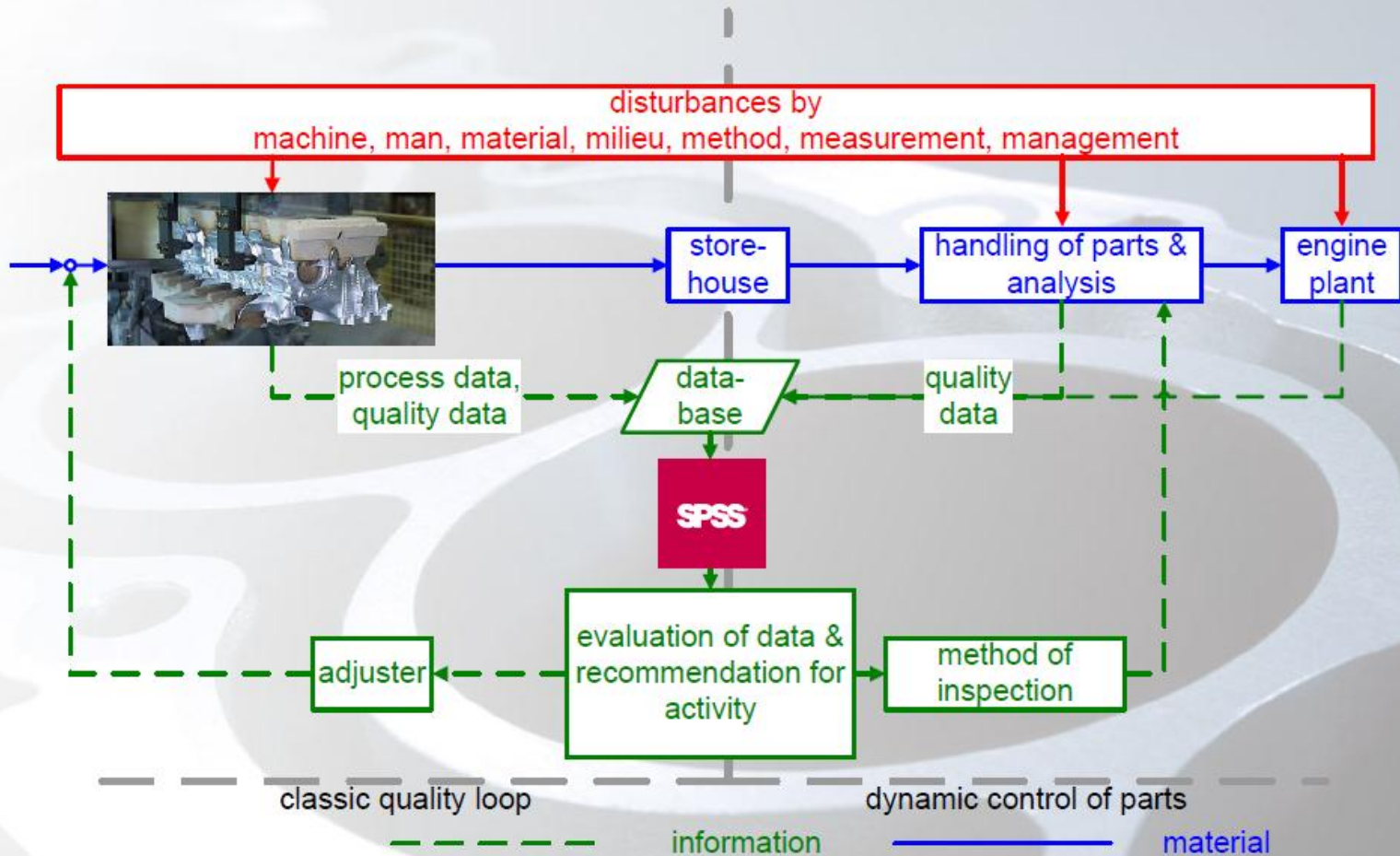
- Production exchange engines
14000 per year
- Production propeller shafts
more than one million per year
- Production plastic exterior
bumper, side panels & carbon fibre components
- Production plastic interior
instrument panels & middle consoles
- Alloy foundry
cylinder heads & crank cases for engines

Stability of processes

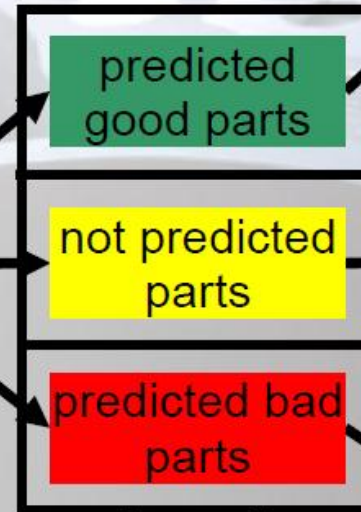
- Why can processes be unstable?
 - Existence of unknown influences
 - Existence of unknown interactions between parameters
 - Existence of disturbance influences (weather, etc...)
 - Human being as not controllable influence



Combined quality loop



Overview about future activities



normal part handling without inspection

normal part handling with inspection

no part handling



Predicting is about Decisions

Where you want to be!



A decision with a favorable outcome

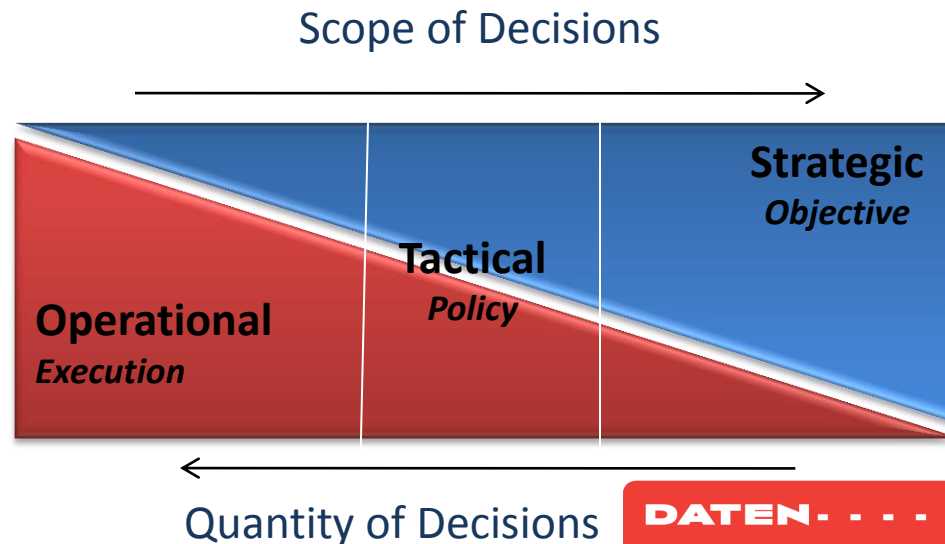
What's in your way!



Data? Process? Policy?
People? Knowledge? Time?
Location? Politics? Legal Constraints?

Decisions vary in scope

- **Strategic decisions**
 - Set the long-term direction for the organization. An initiative which results in guidelines within which operational decisions are made.
- **Tactical decisions**
 - The formation of policy or process. Focused on a specific project or objective which is executed at a tactical level.
- **Operational decisions**
 - Applying a policy, process, or rule set to a specific case. Lends itself to automation



Who makes decisions?

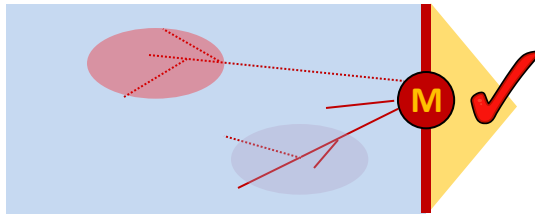
- Different kinds of people
 - Consumers
 - Call Center Reps
 - Sales People
 - Line of Business Managers
 - Executives
- Different kinds of systems
 - The IVR / Phone system
 - The website
 - The CRM system
 - A custom risk management database



Analytics are used in different ways to optimize decisions



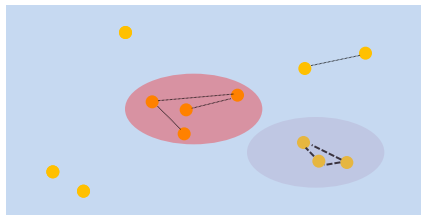
Predict & Act



“NOW”

Deployment of Predictive Models:

- Leverage current data to drive better decisions
- Make robust predictions on current and future cases
- Embed predictive models into points of interaction

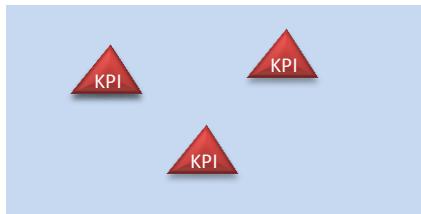


“NOW”

Insight Driven Predictive Analytics:

- Algorithms automatically discover significant patterns
- “Learn” from historical data – create predictive models
- Valuable insight into behavior improves strategic and operational decision making

Sense & Respond



“NOW”

Traditional BI and Conventional Analysis:

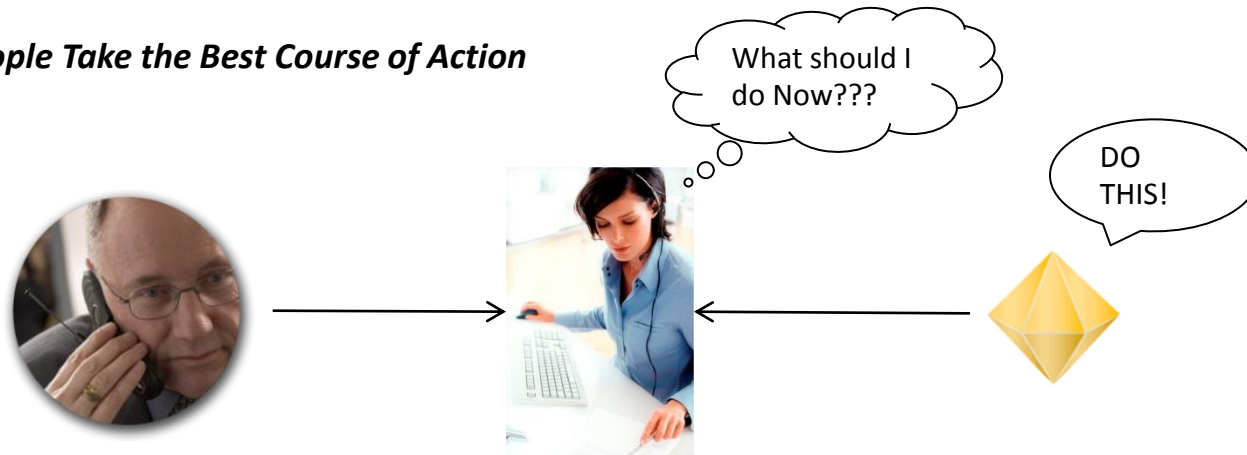
- KPIs and metrics provide insight
- Aggregate data up to and including current point in time
- Self guided exploration of data



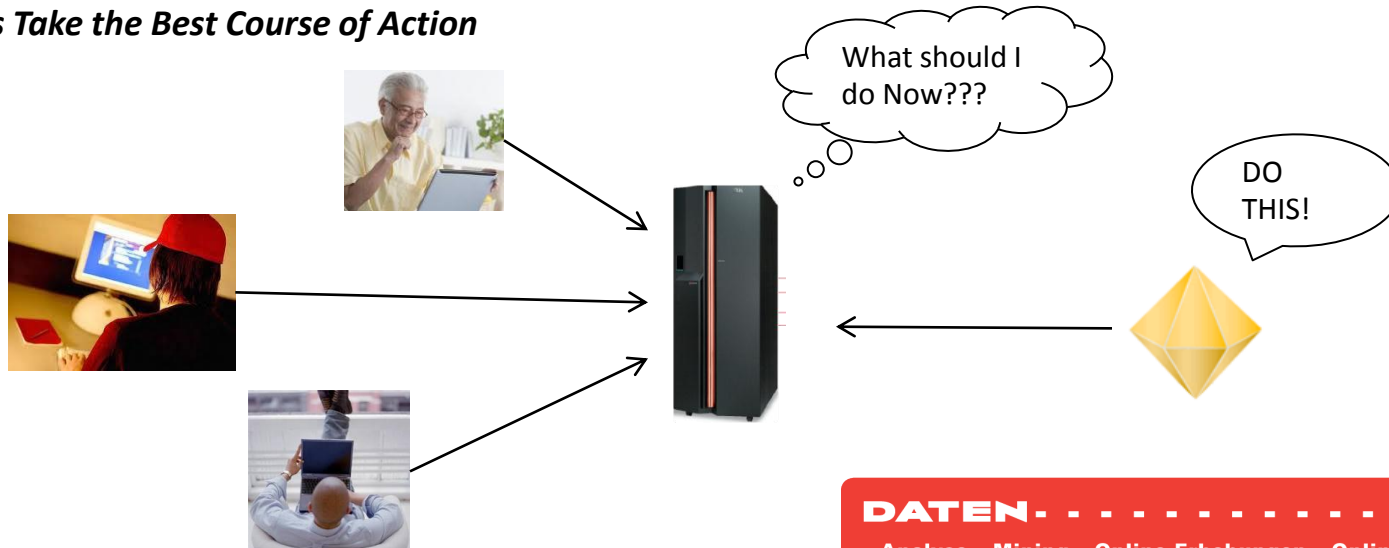
The End Game of Predictive Analytics = Deployment

Applying predictions at the point of interaction

Help People Take the Best Course of Action



Help systems Take the Best Course of Action



IBM SPSS Decision Management



| Combine Matrix | | Model Actions | | |
|----------------|-------------|---------------|-------------|-------------|
| | | Fast Track | Follow S... | Potentia... |
| Rules Actions | Fast Track | Fast Track | Follow S... | Follow S... |
| | Follow S... | Follow S... | Follow S... | Potentia... |
| | Potentia... | Follow S... | Potentia... | Potentia... |

Matrix Colors

- Fast Track
- Follow Standard Process
- Potentially Fraudulent

- The power of predictive analytics:
 - In the hands of the business
 - Combine analytic results with business knowledge
 - In language they can understand
 - Completely configurable solution templates
- Focused on the point of impact
 - Automated decisions become part of the business DNA
 - Best practices decision making for industry problems

The next wave of predictive analytics – built on convergence

Configurable Decision Management Solutions Based on Business Problems

Decision Management for Claims

Decision Management for Customer Interactions

PASW® Claims Management

Data Global Selections Define **Combine** Deploy Reports

Lock project (other users will be unable to edit)

What If...

Simulation Data Source: sdbank claims data | Simulation Date: 2009-11-02 12:41:27 | Claim Area: AAA 15 | Interaction Point: Auto

| Rule actions | Combine matrix | Model actions | | | Results | | |
|--------------|----------------|---------------|------------|------------|--------------|------------|-------------|
| | | Refer | Standard | Fast Track | Action | Count | Percent |
| Refer | Refer | Refer | Refer | Standard | Refer | 77 | 9.872% |
| Standard | Refer | Refer | Refer | Standard | Standard | 187 | 23.974% |
| Fast Track | Refer | Standard | Fast Track | Fast Track | Fast Track | 516 | 66.154% |
| | | | | | Total | 780 | 100% |

Name: Run 3 [Run] [Update Settings] [Close]

Total Simulation Records: 975

| Action | Run 1 | Run 2 | Run 3 | Distribution |
|--------------|------------|------------|------------|--------------|
| Refer | 22 | 25 | 77 | |
| Standard | 55 | 239 | 187 | |
| Fast Track | 703 | 516 | 516 | |
| Total | 780 | 780 | 780 | |

PASW® Customer Interaction Management

Data Global Selections Define **Prioritize** Deploy Reports

Lock project (other users will be unable to edit)

Customer Interactions LATEST

Retention Properties

Active: From: 2009-10-23 19:54:14 | No expiration | Interaction points: Call Centre, Website

Choose Who This Campaign Applies to

High Value Customers (Include)

Allocate to

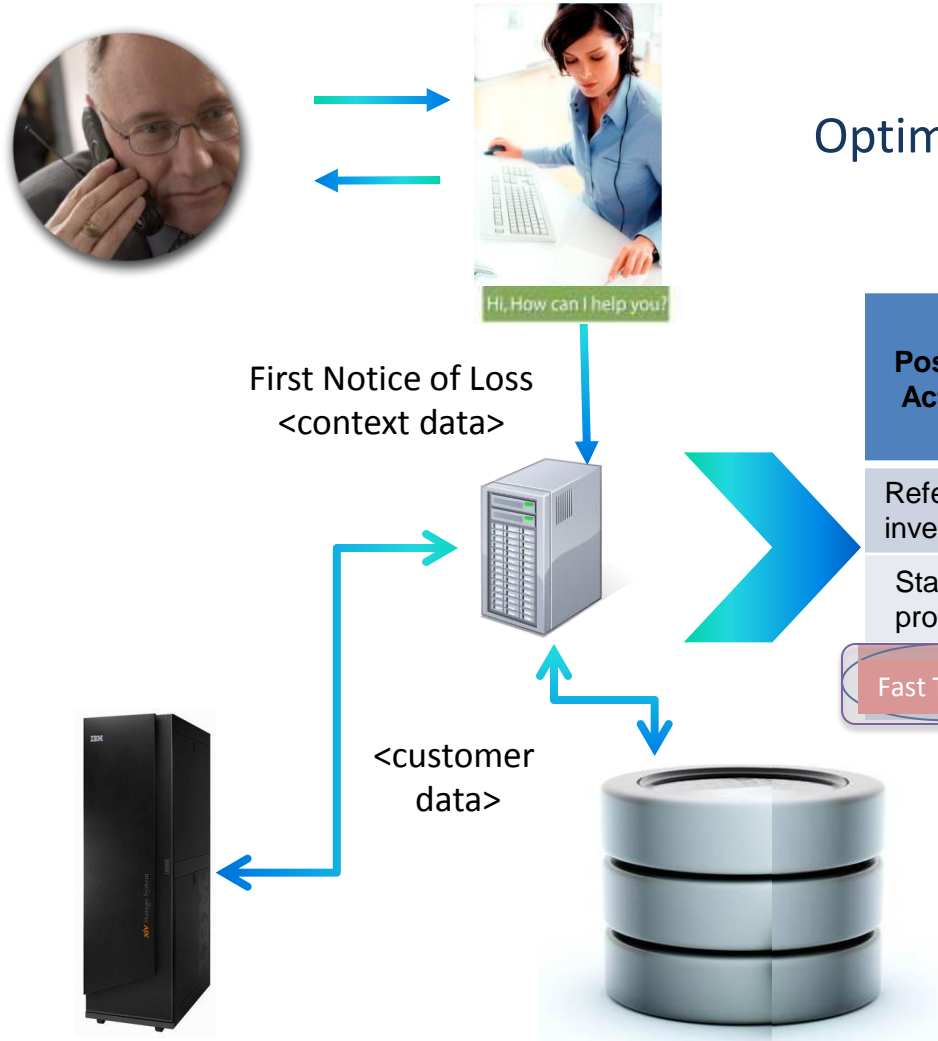
Allocate using rules (selected) | Allocate randomly

| Rule name | Allocate to | Sort |
|-------------|-----------------|------|
| 1 Females | Theatre Tickets | ▲▲ |
| 2 Males | Racing Day | ▲▲ |
| 3 Remainder | | |



From the back office to the point of interaction

Optimizing the Insurance Claims Process

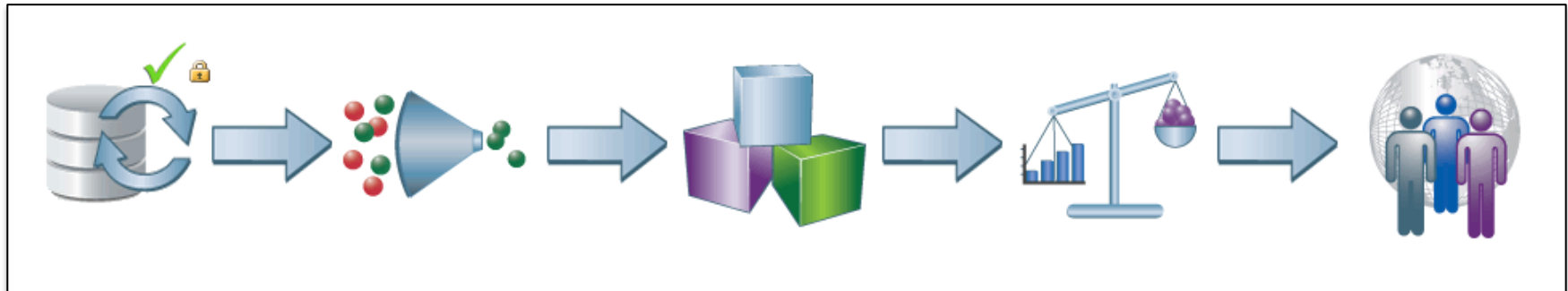
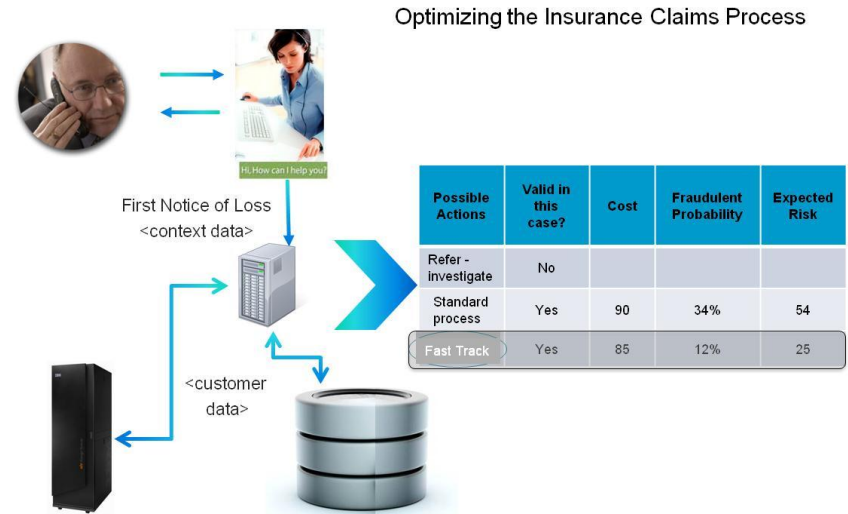


| Possible Actions | Valid in this case? | Cost | Fraudulent Probability | Expected Risk |
|---------------------|---------------------|------|------------------------|---------------|
| Refer - investigate | No | | | |
| Standard process | Yes | 90 | 34% | 54 |
| Fast Track | Yes | 85 | 12% | 25 |

Structured analytical decision making

Best practices approach based on our experience in the marketplace

1. Connect to data
2. Define scope of decisions
3. Define desired outcomes
4. Define business rules / models
5. Optimize the decisions
6. Deploy / Score
7. Report





Defining Desired Outcomes... Step 3

Typically with all decisions there is a finite set of desired outcomes that can be achieved.

Car Ins. Next Step? ▼

Fast Track

Standard Process

Refer - Likely Fraud

Define Rules and Models... Step 4

Business user defines rules that embody their priorities and experiences

| Rule name - | Risk points | Sort | Remove |
|---|-------------|------|--------|
| 1 <input type="checkbox"/> <u>Young Male Driver</u> | 2 | ▲▼ | ✖ |
| 2 <input type="checkbox"/> <u>Initial Provision over 3k</u> | 1 | ▲▼ | ✖ |
| 3 <input type="checkbox"/> <u>Initial Provision above 5k</u> | 2 | ▲▼ | ✖ |
| 4 <input type="checkbox"/> <u>Police not called to the...</u> | 2 | ▲▼ | ✖ |
| 5 Remainder | 0 | | |

[+ Add Action](#) [+ Add annotations](#)

| | Sum of Points >= ↓ | Allocate to | Remove |
|---|--------------------|----------------------|--------|
| 1 | 5 | Refer - Likely Fraud | ✖ |
| 2 | 2 | Standard Process | ✖ |
| 3 | 0 | Fast Track | |

Existing Models are leveraged – or new ones are created by the business user

[Find a model](#) [Build a model](#)

| Model | Target | Measure | Remove |
|---|--------|------------|--------|
| <input type="checkbox"/> <u>fraud_model.str</u> | Fraud | Propensity | ✖ |

[+ Add Action](#) [+ Add annotations](#)

| | Propensity >= ↓ | Allocate to | Remove |
|---|-----------------|----------------------|--------|
| 1 | 0.5 | Refer - Likely Fraud | ✖ |
| 2 | 0.3 | Standard Process | ✖ |
| 3 | 0 | Fast Track | |



Optimize / Prioritize Outcomes... Step 5

The decision outcome is optimized and balanced between the predictive models that provide real time insight and the rules that govern the policy and practices of the company

What If...

Simulation Data Source: sdbank claims data | Simulation Date: 2010-04-26 10:42:37 | Claim Area: Auto

| Combine matrix | Model actions | | | Results | | |
|----------------|---------------|------------|------------|------------|-------|---------|
| | Refer | Standard | Fast Track | Action | Count | Percent |
| Rules actions | Refer | Refer | Standard | Fast Track | 710 | 91.03% |
| | Standard | Standard | Standard | Refer | 3 | 0.38% |
| | Fast Track | Fast Track | Fast Track | Standard | 67 | 8.59% |
| | | | | | 780 | 100% |

Name: Run 3 [Run] [Update Settings] [Close]

Total Simulation Records: 975

Display: Count | Number of runs retained: 2

| Action | Run 1 | Run 2 | Distribution |
|------------|-------|-------|--------------|
| Fast Track | 680 | 710 | |
| Refer | 62 | 3 | |
| Standard | 38 | 67 | |
| Total | 780 | 780 | |

Flexible What-if and Simulation tools for Optimization and Prioritization

Deploy... Step 6

- The project is ready to move into production (for real time inbound decisions) or score in batch to deliver outbound communications
- Model Management capabilities allow ongoing monitoring / improvement of the models in production

Deploy As

Deploy
Testing
Preproduction

SDBankInsure Welcome: Piet Pietersen | log out | help

Thursday: 2010-04-15

| | | |
|---------------------|----------------|-------------------|
| START | Customer ID: 1 | Claim ID: 2554363 |
| NOTIFICATION | | |
| Identification | | |
| Incident | | |
| Damage | | |
| Liability | | |
| CLAIM | | |
| Coverage | | |
| Payment | | |
| ALERT | | |

Identification

Gender of Driver *

Age of Driver *

Cause Accident *

Claim Type Notification *

Claim Area *

Postal Code

Phone Number

Occupation

Incident

Date of loss

Time of loss

Number of vehicles

Number of damaged vehicles

Number of towed vehicles

Towing service used

Number of people

Number of injured people

Number of witnesses


Ambulance Yes No Unknown

Police report * Yes No Unknown

Damage

Claim type *

Incident description

Damage 

Payment

Total reserve amount (initial provision) *

Total property damage

Total medical bills

Coverage

Comp & collision

Property damage

Liability property damage

Liability bodily injury

Uninsured motorists property damage

Uninsured motorists bodily injury

Person injury protection

Medical payment

Liability

Responsibility

Suggested Action: Refer

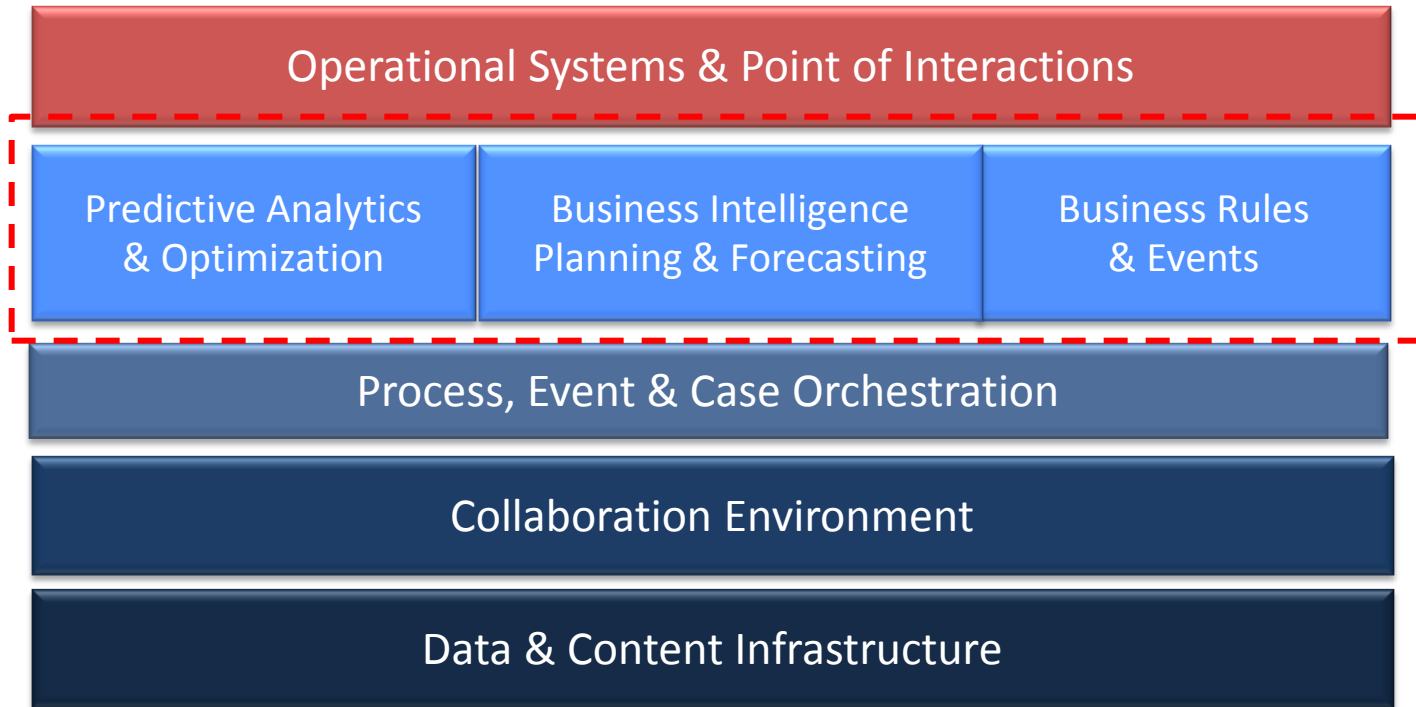
Claim Area evaluated: Auto





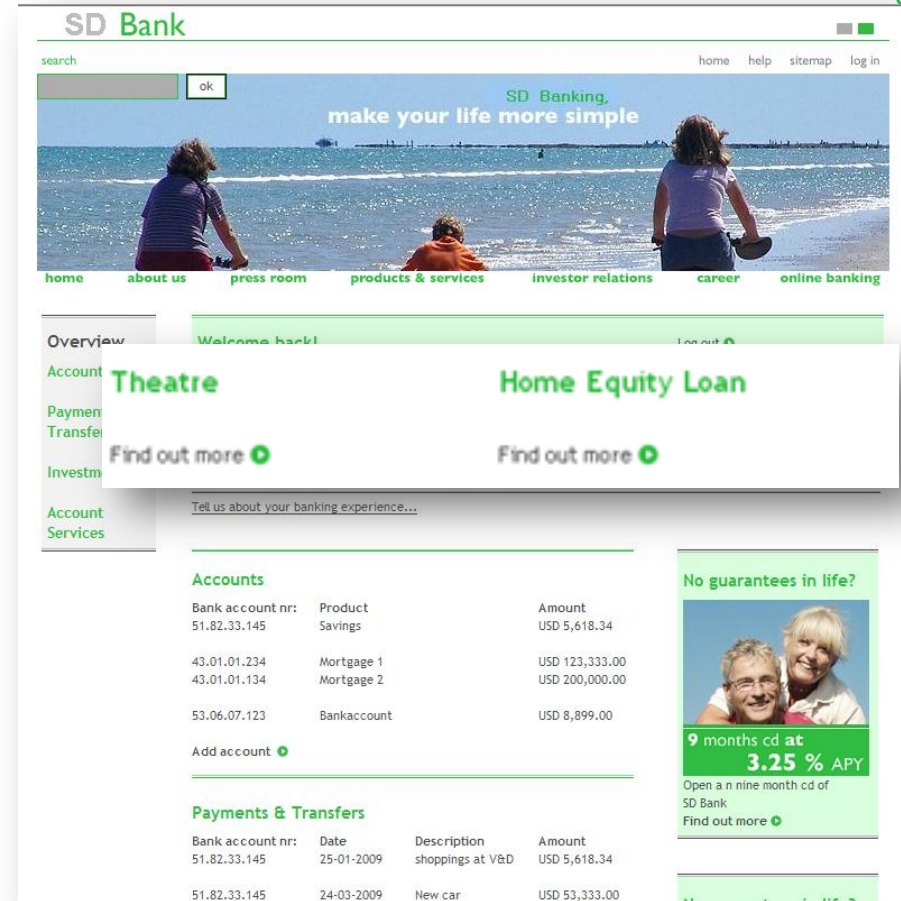
Information and Analytics Technology Stack

**Key
Technologies
for optimizing
the point of
Interaction**



Customer Interaction Management – Scenerio

- Goal: Make marketing offer recommendations when customers contact company via their call center, branch and website
 - Choose the best offer for each customer based on expected profit
 - Balance the needs of retention and cross-sell campaigns
- Solution: Process incoming interactions in real time, and recommend the best offer to the customer





Define Desired Outcomes...

Campaigns

Retention

Theater

Racing

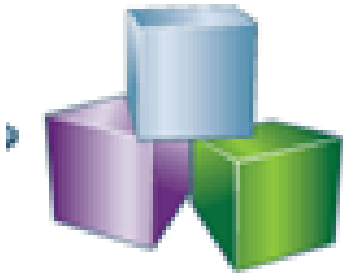
Offers

Cross Sell

Credit Card

Personal Loan

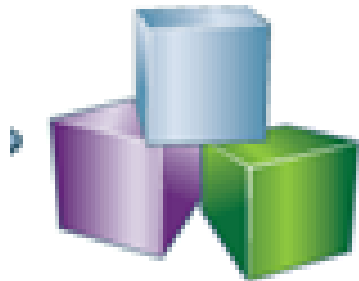
Home Equity Loan





Define Outcomes: Rules and Models ...

Decide who is eligible for each campaign and offer, and through which channel, and simulate results



Retention Properties

Active
 From: 2009-12-28 20:53:33 No expiration
 To: 15

Interaction points
 Call Center Website
 In Branch Office

Choose Who This Campaign Applies to

Find an existing rule Create a new rule View selection logic Export

| Rule name - | Include/Exclude | Remove |
|------------------------|-----------------|--------|
| 1 High Value Customers | Include | Remove |

Allocate Offer Using Segment Rules

Allocate using rules Allocate randomly

Allocate to: First valid Offer

Find an existing rule Create a new rule Add annotations Export

| Rule name - | Allocate to | Sort | Remove |
|-------------|-------------|------|--------|
| 1 Male | Racing | ▲▼ | Remove |
| 2 Female | Theater | ▲▼ | Remove |
| 3 Remainder | | | |

Prioritize the best offers...

Prioritization Parameters

Use same settings for all interaction points All interaction points

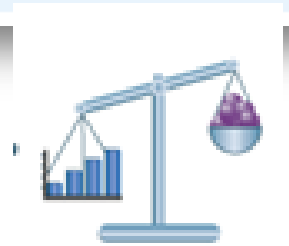
Max number of offers: Customize table

| Campaign/Offer | Prob.to Respond | Revenue | Cost | Min.Profit | Override | Order |
|----------------|---------------------------------------|--|---------------------------------|---------------------------------|----------|-------|
| Retention | <input type="text" value="sdbank_r"/> | <input type="text" value="Annual va"/> | <input type="text" value="22"/> | <input type="text" value="10"/> | | |
| Cross Sell | <input type="text" value="0.5"/> | <input type="text" value="340"/> | <input type="text" value="3"/> | <input type="text" value="10"/> | | |

Prioritization Equation (Value to be maximized)

$(\text{Prob.to Respond} \times \text{Revenue}) - \text{Cost}$

When customers are eligible for multiple offers, use probabilities, costs and revenues to determine which offer maximizes profit, then simulate the impact



Customer Interaction Management – Telco

my activities team activities products charts introductions

Welcome, John Palmer

log out help

end call hold call direction

Customer Details

| | | | |
|------------|--|------------|--------------------------------------|
| Last name | <input type="text" value="James"/> | Gender | <input type="text" value="M"/> |
| First name | <input type="text" value="Horsfield"/> | | |
| Address | <input type="text" value="12 Bay St"/> | Age | <input type="text" value="27"/> |
| City | <input type="text" value="Windsor"/> | Profession | <input type="text" value="Student"/> |
| Postcode | <input type="text" value="SL4 5TB"/> | | |

Customer ID

get info

Estimated Satisfaction: 64%

Products

| ID | Description | Group |
|----|------------------------------|-------|
| 12 | BB Fast and Reliable | |
| 13 | Unlited Weekend Calling Plan | |
| 14 | Friends and Family Mobile | |

Contact history

| Description | Date | Result |
|------------------------|----------|--------|
| March Cam Talk & Surf: | 26/03/10 | 0 |
| Qtr1 Billing DD: | 28/03/10 | Paid |

Customer's current details are displayed

Details current call

| | |
|--|----------------------|
| Type of contact | Description |
| <input type="text" value="-- To be determined --"/> | <input type="text"/> |
| <ul style="list-style-type: none"> -- To be determined -- Information request Service Complaint Quotation request Direct sales Change request Cancellation Other | <input type="text"/> |

Customer requests specific information

Recommendation

| Interaction | Offer | Action |
|-------------|-------|--------|
| | | |
| Bonus | | |

end call hold call direction

Customer Details

Last name: James Gender: M

First name: Horsfield

Address: 12 Bay St Age: 27

City: Windsor Profession: Student

Postcode: SL4 5TB

Customer ID: 1030

get info

Estimated Satisfaction: 68%

Products

| ID | Description | Group |
|----|------------------------------|-------|
| 12 | BB Fast and Reliable | |
| 13 | Unlited Weekend Calling Plan | |
| 14 | Friends and Family Mobile | |

Contact history

| Description | Date | Result |
|------------------------|----------|--------|
| March Cam Talk & Surf: | 26/03/10 | 0 |
| Qtr1 Billing DD: | 28/03/10 | Paid |

Optimization engine generates an offer in real time

Details current call

Type of contact: Information Request

Description: Would I file size

submit

Offer is accepted and bonus value calculated

Recommendation

| Interaction | Offer | Action |
|-------------|---------------------|----------|
| and Upgrade | Unlimited Broadband | Accepted |

bonus £15

Border Risk Analysis

Data Define Combine Deploy

Lock project (other users will be unable to edit)

BRAVE Project Deploy



Welcome dmuser

+ Add a new Risk Area Import Export

[-] Collapse all [+] Expand all

Narcotics

Refer ★

Default ★

Fast Track ★

Increased ★

None ★

Decreased ★

Cash

Refer ★

Default ★

Fast Track ★

Increased ★

None ★

Decreased ★

Firearms

Refer ★

Default ★

Narcotics Properties

Simulate

Use Rules

Triggered

Test

Types of searches
– and possible
actions

Remainder: Apply when no rules hit

Business Rules

| Rule name | Risk points | Sort |
|---------------------------------|-------------|------|
| 1 + Crossed the border more ... | 4 | |
| 2 + Single Vehicle Occupant | 2 | |
| 3 + Border Entry Point is El... | 1 | |
| 4 + License plate changed mo... | 3 | |
| 5 Remainder | 0 | |

Using Risk Points

| Sum of Points >= | Allocate to | Remove |
|------------------|-------------|--------|
| 1 5 | Refer | |
| 2 3 | Default | |
| 3 0 | Fast Track | |

Use a Model to Decide Which Risk Area is Triggered

Find a model Build a model

| Model | Target | Measure | Remove |
|-----------------|-------------------------------|------------|--------|
| NarcoticsStr... | InvestigationResult_NARCOTICS | Propensity | |

Propensity
Model

Tax Audit

Combine Rules and Models

Score Current Tax Payers

Reports

+ Add a new Tax Returns Area Import Export

[-] Collapse all [+ Expand all

[-] Individual Tax Ret...

No Action ★

Desk Audit ★

Field Audit ★

[-] Business Tax Returns

No Action ★

Desk Audit ★

Field Audit ★

Individual Tax

Active

From: 2010-1

No

Choose Who

Different actions for individuals vs businesses

Find an existing rule Create a new rule View selection logic

Rule name -

Include/Exclude

1 + Schedule C False

Include

Use Rules to Decide Which Action is Triggered

Find an existing rule Create a new rule Add annotations OR Split OR

Rule name -

Risk points

Sort

1 + Prisoner = Yes

10

2 + Withholding Wage > 50

8

3 + Gifts to Charity > 50

2

4 + DependentCareExpenses...

5

5 Remainder

0

+ Add Action + Add annotations

Sum of Points >= ↓

Allocate to

1 10

2 9

3 0

Fraud propensity model

Use a Model to Decide Which Action is Triggered

Find a model Build a model

Model

Target

Measure

TaxAudit_MA.str

Fraud

Propensity

Tax Audit - Prioritize

WhatIf?

Simulation Data Source

Simulation Date

Tax Returns Area

Current Tax Returns

2010-10-19 09:33:08

Individual Tax

| Combine matrix | | Model actions | | |
|----------------|-------------|---------------|-------------|------------|
| | | Field Au... | Desk Audit | No Action |
| Rules actions | Field Au... | Field Au... | Field Au... | Desk Audit |
| | Desk Audit | Field Au... | Desk Audit | Desk Audit |
| | No Action | No Action | Desk Audit | No Action |

| Results | | |
|-------------|-------|---------|
| Action | Count | Percent |
| Desk Audit | 177 | 3.72% |
| Field Audit | 6 | 0.13% |
| No Action | 4574 | 96.15% |
| | 4757 | 100% |

Name: Run 3

Total Simulation Records: 4930

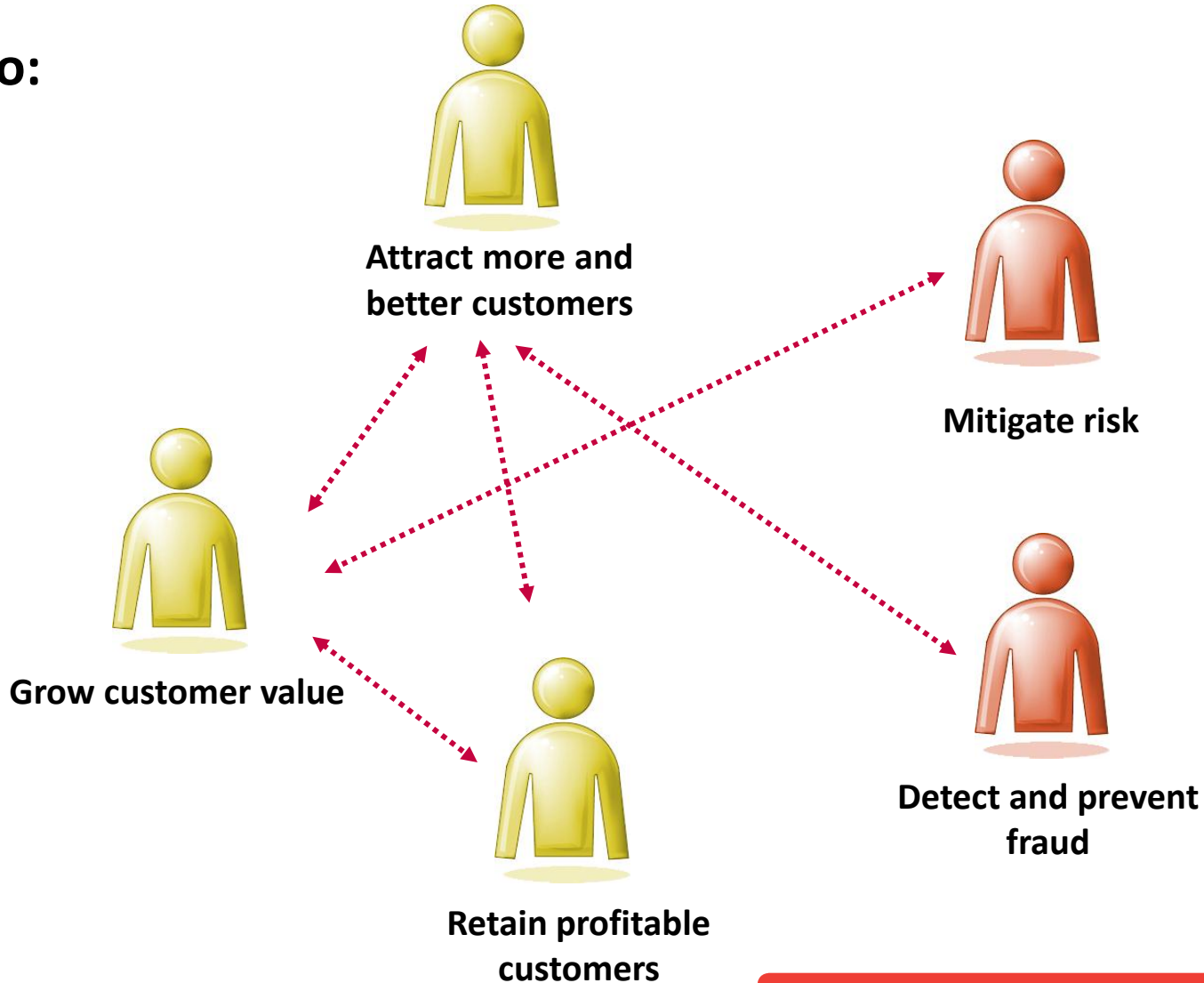
Display Count

| Action | Run1 | Run 2 | Distribution |
|-------------|------|-------|--------------|
| Desk Audit | 175 | 177 | |
| Field Audit | 8 | 6 | |
| No Action | 4574 | 4574 | |
| Total | 4757 | 4757 | |

Adjusting priorities shows impact on audit teams

Typical analytic applications

How to:



Application Areas



Banking

- Customer Intimacy
- Integration into Enterprise Risk



Insurance

- Cross-sell & Retention
- Claims Processing



Government

- Safety / Crime Prevention
- Analytics for Smarter Cities



Education

- Student Retention and Performance



Retail

- Market Basket Analysis
- Assortment Planning



Telco

- Churn Management



Industrial

- Predictive Maintenance

Contact

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