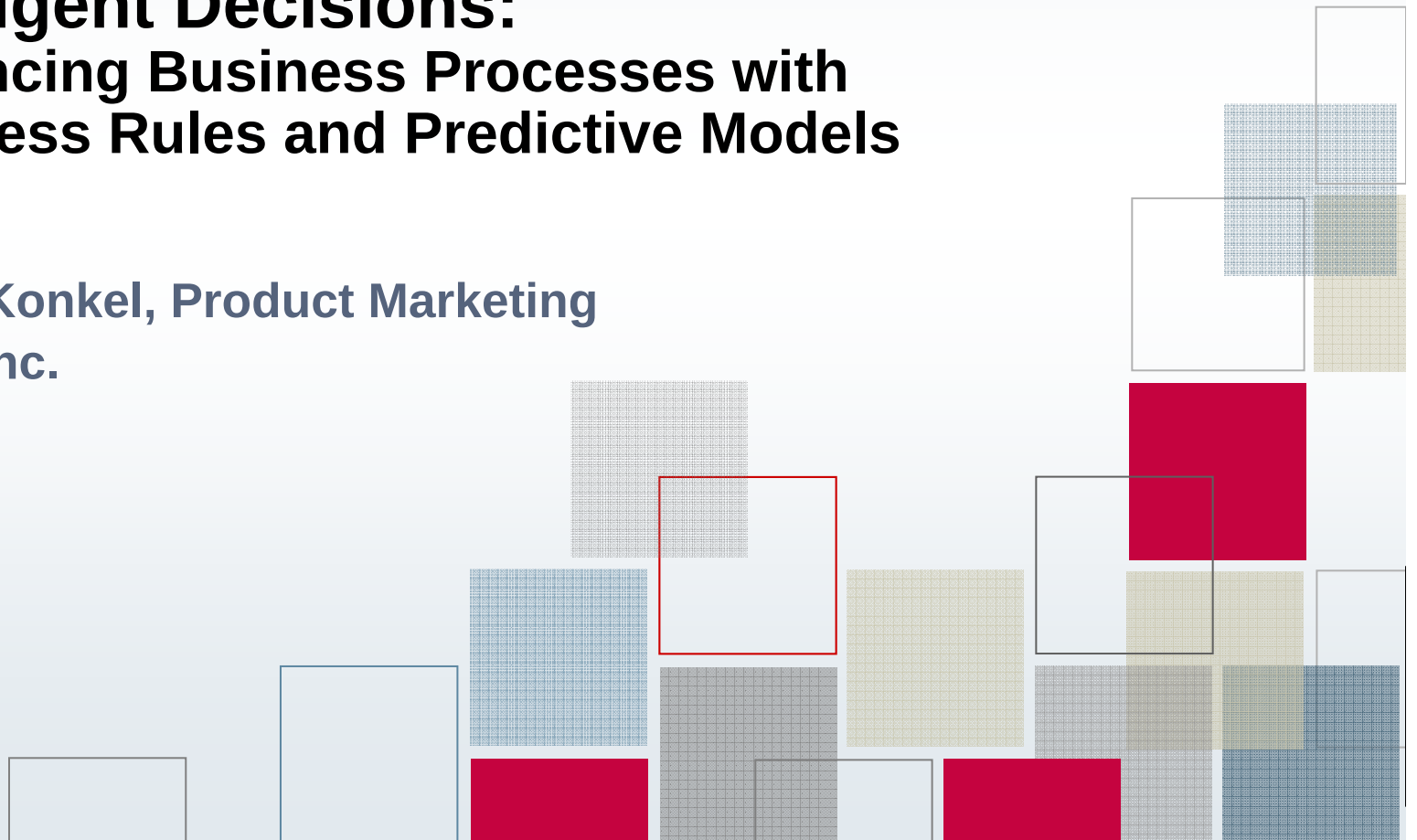


> Intelligent Decisions: Enhancing Business Processes with Business Rules and Predictive Models

Kathy Konkel, Product Marketing
SPSS Inc.



> SPSS-Audio Broadcast Webinars



- The audio portion of this event will come through your computer speakers. (see adjusting volume control below)
- If you do not have functioning speakers, and would like to dial in to the call using your telephone, please dial:

US/Canada 866.469.3239

*****Event Number: 668 948 050**

- Upon joining the call, **you will not hear hold music**. Periodic announcements will be made to test the volume through your speakers.

Q & A

- Type any questions into the Q&A Tab on the right

Adjusting volume control

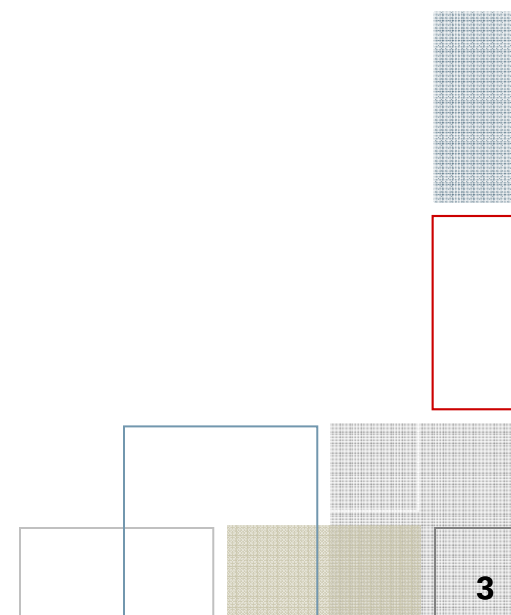
- Through the Volume Control Panel on your computer
- Through the Webex Audio Broadcast window (see image below). You can adjust the volume slider on this control as needed.



> Commonly Asked Questions

SPSS

- Can I get copies of these slides after the event?
- Is this event being recorded for later viewing?



> Commonly Asked Questions

- Can I get copies of these slides after the event?

Yes

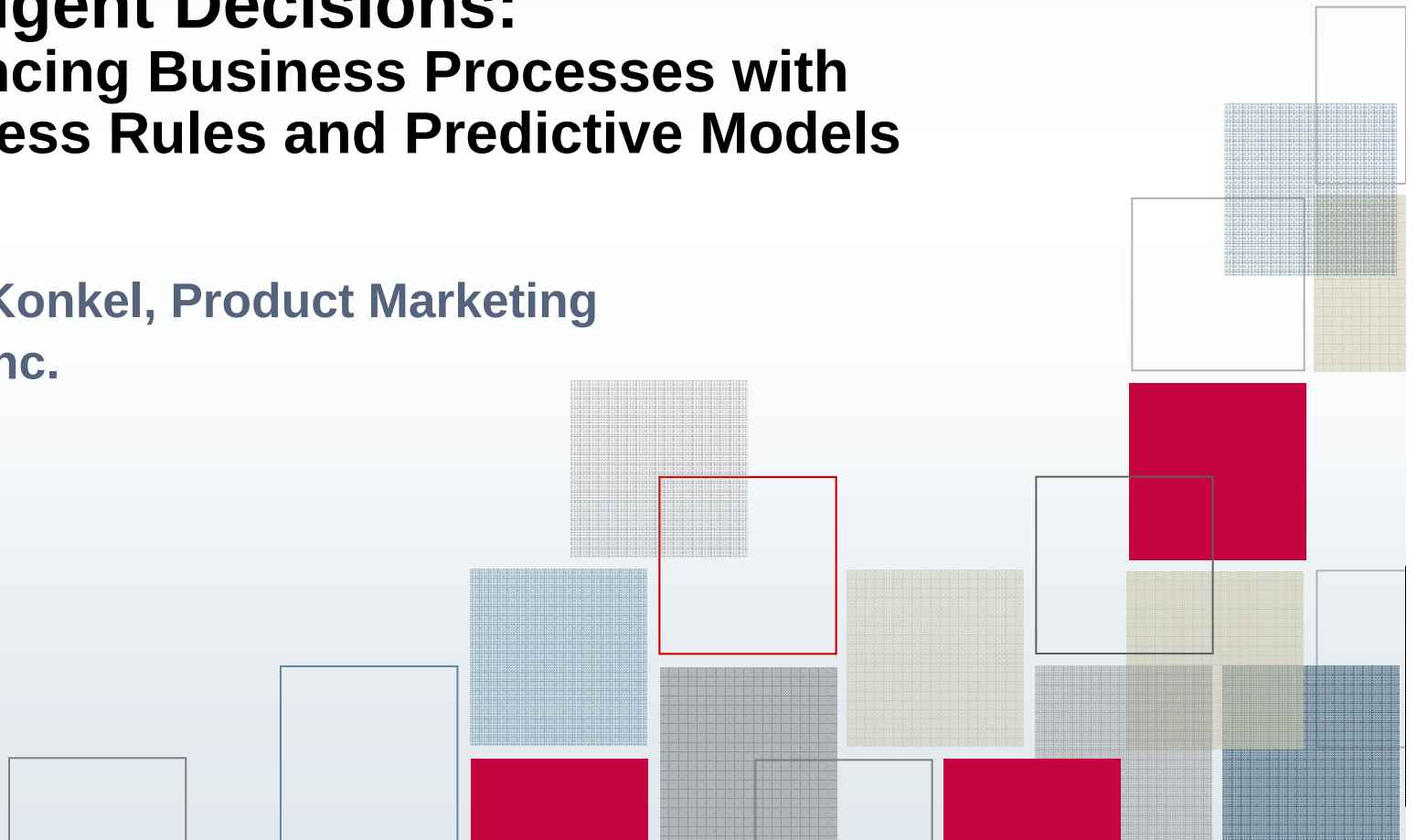
- Is this event being recorded for later viewing?

Yes

www.spss.com/events

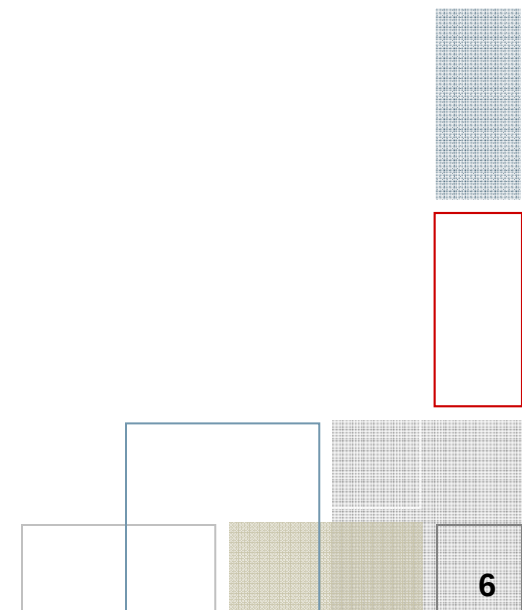
> **Intelligent Decisions: Enhancing Business Processes with Business Rules and Predictive Models**

Kathy Konkel, Product Marketing
SPSS Inc.



> Agenda

- Managing decisions
- Optimizing decisions
- Infrastructure requirements
- Q&A

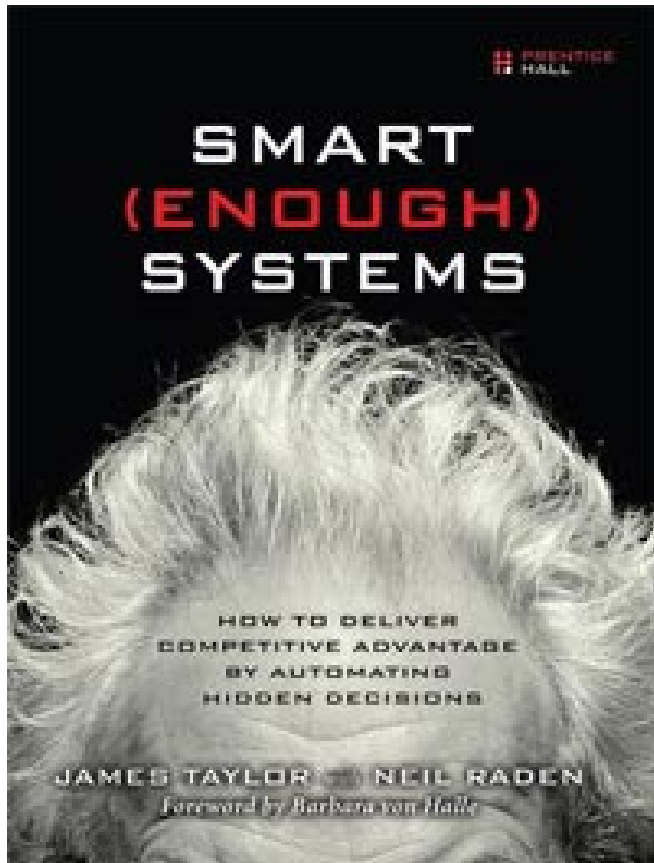


Customer Intimacy

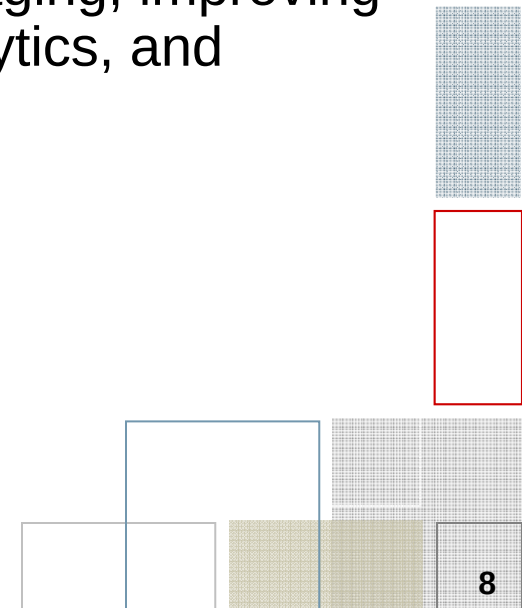
Fraud Detection Process

Operational Excellence

> Decision Management



- Which decisions?
 - Operational Decisions vs. Strategic Decisions
 - Focus on high volume, front line decisions
- Enterprise Decision Management
 - Automating, managing, improving
 - Role of data, analytics, and business rules



> Intelligent Decisions

- Gartner defines 'Intelligent Decision Management '

...combines **predictive analytic** and **decisioning** capabilities

...to identify the **optimal next action** to take

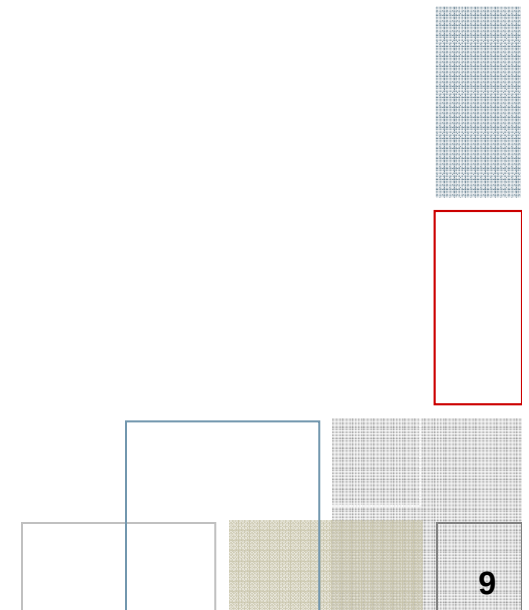
...in a **real-time** process
(such as a customer service interaction)

The analysis can be based on a **variety of approaches**
(for example, product affinities or customer behavioral predictions)

...but the solution must include an **arbitration (rule) capability** that is based on the enterprise's strategy

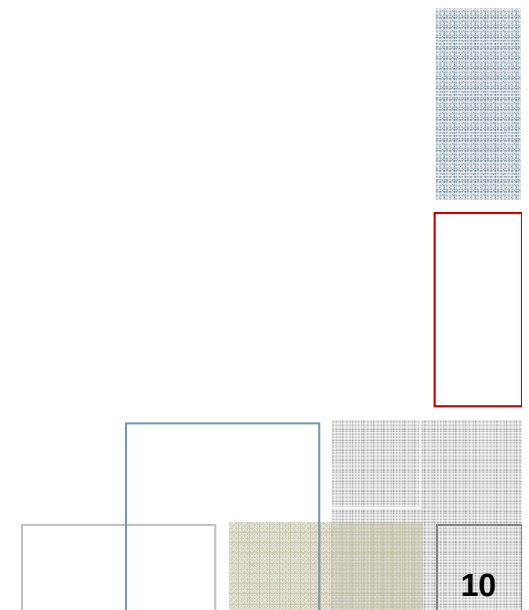
...to select the **optimal** next action

...of **several possible treatments**.



> Optimized Decisions

- Making a decision or recommendation based on
 -a set of **options**
 -a combination of **predicted** behavior and business **rules**
 -using business **goals** to arbitrate

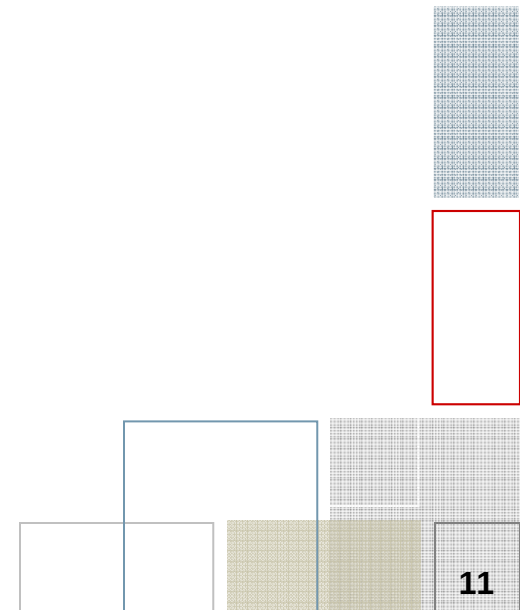


> Examples: Options / Predict + Rules / Goals

- Marketing campaigns
 - Who to target, when and how

- At point of contact
(Call center, ATM, retail branch, website...)
 - Cross sell opportunities – next best product/offer
 - Complaints – recommended actions
 - Insurance claims – recognizing fraud, intelligent questions
 - Loan/credit applications – who to accept, how much to allow

- Others
 - Lead management – how to route, qualification
 - Debt collection – who to target, when and how
 - Government agencies – approvals, investigations



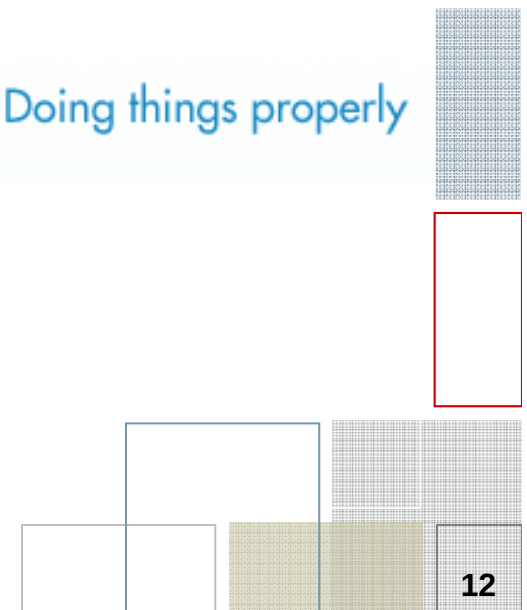
> Examples of ROI

SPSS

- Insurance claims processing
 - Reducing costs and payments on fraudulent claims
 - Improving ability to collect payments from other insurance companies (subrogation)
 - **403% ROI in 3 months**
- Marketing campaign optimization
 - Minimized cost by not targeting some prospects
 - Enabled growth by including customers outside of normal target segments
 - **\$1M increase in revenue**



SAGA Doing things properly



> In Action:

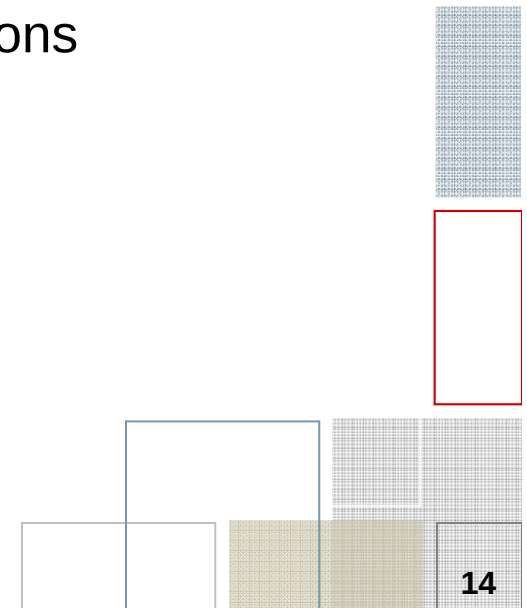
Optimizing Claims Management



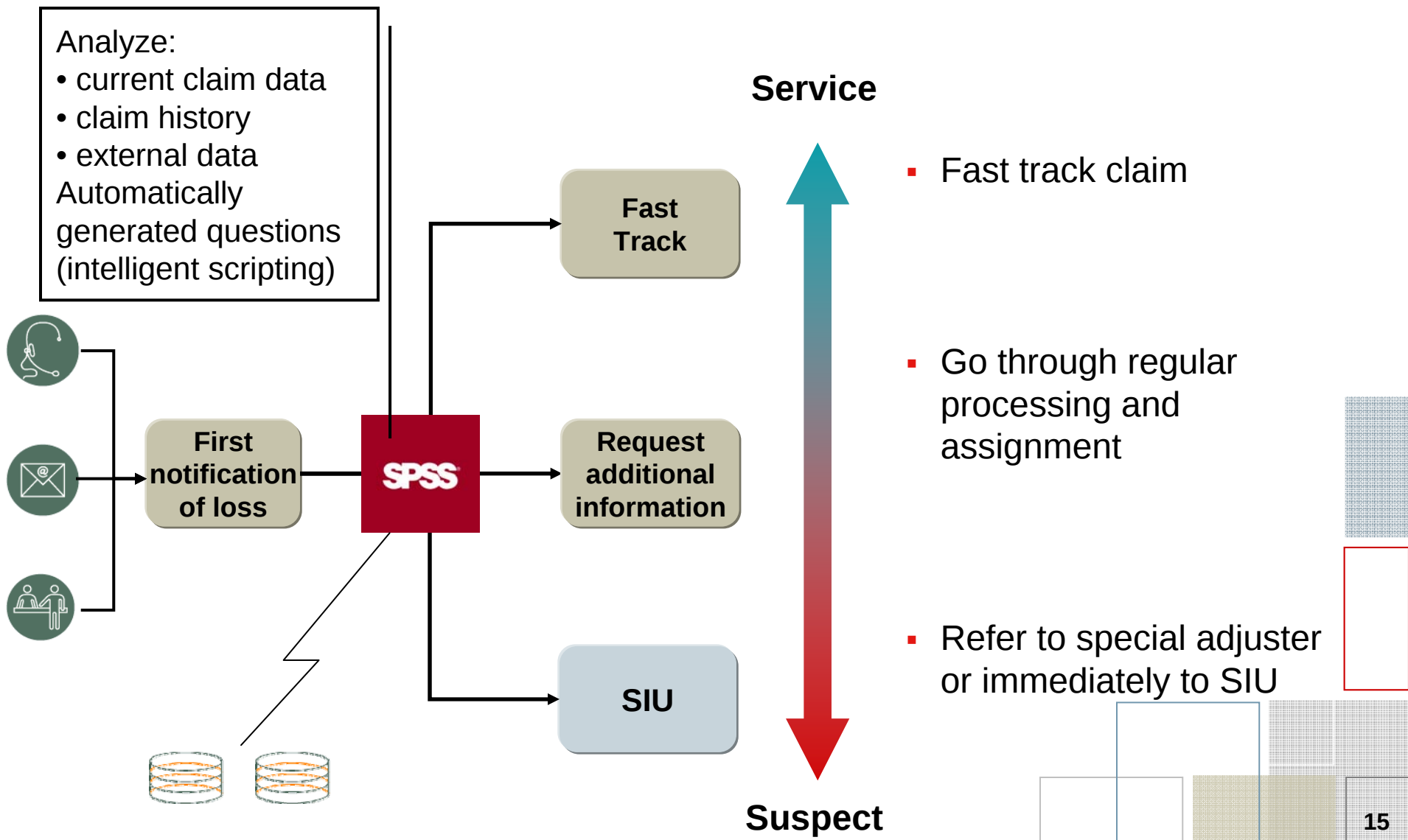
> Optimized Claims Processing: The Goal

- Minimize time taken to process low risk claims
 - Increase customer satisfaction
 - Fast track good customers - paying claims quickly
- Increase quality of referrals to SIU*
 - Assist the SIU in ranking and prioritizing cases (based on exposure, fraud risk and solvability)
 - Detailed explanation of risks
 - Objective referrals, not based on subjective reasons

* Special Investigation Unit



> The Process: Integration Points







- Claim Overview
 - General Information
 - Vehicle
 - Loss Overview
 - Claimant
 - Task Overview
 - RBP Overview
 - Notes

 Risk Level: Medium

Contact your supervisor.

[Risk Details](#)

Risk Level: Medium

Probability

50%

Analytics

Decreased: More than 3 vehicles involved and a police report was made.

Points

2.0

3.0

3.0

8.0

Business Rules

Policy coverage recently changed
Policy recently opened
Over three claims in the last three months

Total Risk Points



[illegible]

 Risk level: Low

Be alert ...

[Risk Details](#)

Risk Level: Low

~~Probability~~

10%

Analytics

Highly decreased: More than 3 vehicles involved and a police report was made. More than 2 persons involved but nobody was injured.

Points

2.0

3.0

3.0

8.0

Business Rules

Policy coverage recently changed
Policy recently opened
Over three claims in the last three months

Total Risk Points



> Behind the Scenes



> Initial Rules Based Claim Risk Assessment

Risk Control Builder - Risk Area properties

General Planning Inclusions Exclusions Optimization Optimized Risk Levels

Basic Risk Model Auto claim risks

Use	Segment	Target	Risk
☒ DAYS BETWEEN ACCIDENT AND LAST POLICY COVERAGE CHANGE DAYS BETWEEN ACCIDENT AND LAST POLICY COVERAGE CHANGE between (0, 30)			2
☒ CLAIM_TYPE, POLICE_INTERVENTION not(CLAIM_TYPE = "Only material") POLICE_INTERVENTION = 0			2
☒ NR_PERSONS_INJURED, AMBULANCE NR_PERSONS_INJURED > 3 AMBULANCE = 0			3
☒ DAYS SINCE POLICY OPEN DATE DAYS SINCE POLICY OPEN DATE between (0, 30)			3
☒ NR_VEHICLES_DAMAGED, NR_VEHICLES_INVOLVED NR_VEHICLES_DAMAGED = 1 NR_VEHICLES_INVOLVED = 1			3
☒ OR ACCIDENT, COLLISION_BETWEEN_CARS ACCIDENT = 1			3

More than 60 days in arrears

Model is evaluated as Rule model.

Model Value Risk

Thresholds

Basic Risk Level	Sum
None	0
Low	1
Medium	3
High	7

Note that each threshold value entered is the lower boundary for the Basic Risk level and the upper boundary for the previous Basic Risk Level

☐ This risk area is preferred

OK Cancel Apply

Rules capture known internal knowledge

Each rule has a risk weighting associated with it

Initial (basic) risk assessment determined by summing risk weights and thresholding

> SIU Manager Support

SPSS

The screenshot displays the Risk Control Builder application window. On the left, a tree view shows the project structure under 'Building' and 'Testing' tabs. The main area shows the 'Basic Risk Model' properties dialog box. The 'General' tab is active, and the 'Insert Segment' field is highlighted with a red circle. The text 'AGE OF DRIVER between (18, 21)' is entered in this field. Below the field, there is a table of attributes and their domains. The 'Operators' and 'Values' sections are also visible. The 'Model is evaluated as Rule model.' status is shown at the bottom of the dialog box.

Attributes	Domain
DAYS BETWEEN ACCIDENT AND LAST P...	Integer
DAYS BETWEEN ACCIDENT AND LAST T...	Integer
DAYS BETWEEN ACCIDENT AND POLICY...	Integer
DAYS BETWEEN CLAIM OPEN DATE AN...	Integer
DAYS SINCE LAST POLICY COVERAGE ...	Integer
DAYS SINCE POLICY OPEN DATE	Integer
DISTRIBUTION CHANNEL OF POLICY	String
FRAUD_FLAG_OLD	Decimal
GENDER OF DRIVER	String
GENDER OF POLICYHOLDER	String
HABITUAL_DRIVER	Decimal
ID_CLAIM	Decimal
ID_CUSTOMER	Long
ID_DRIVER	Long
ID_POLICY	Decimal
INITIAL_PROVISION	Decimal

Model is evaluated as Rule model.

Easy user interface for maintaining rules

> Predictive Model Based Claim Assessment

Risk Control Builder - Optimized Risk Model Properties

General Extend UCV Model Risk Areas

Use Segment

Model

0 ☒ CLEM_Segment Number
CLEM_Segment Number = 22

1 ☒ CLEM_Segment Number
CLEM_Segment Number = 20

2 ☒ CLEM_Segment Number
CLEM_Segment Number = 10

3 ☒ CLEM_Segment Number
CLEM_Segment Number = 13

4 ☒ CLEM_Segment Number
CLEM_Segment Number = 21

5 ☒ CLEM_Segment Number
CLEM_Segment Number = 18

6 ☒ CLEM_Segment Number
CLEM_Segment Number = 11

7 ☒ CLEM_Segment Number
CLEM_Segment Number = 5

8 ☒ CLEM_Segment Number
CLEM_Segment Number = 3

9 ☒ CLEM_Segment Number
CLEM_Segment Number = 3

10 ☒ CLEM_Segment Number
CLEM_Segment Number = 3

11 ☒ CLEM_Segment Number
CLEM_Segment Number = 5

12 ☒ CLEM_Segment Number
CLEM_Segment Number = 3

13 ☒ Remainder

Optimized Risk Level Probability

d 0.01

d 0.81

d 1.2

d 1.72

d 2.21

d 2.49

Increased 10.93

Increased 11.1

Increased 11.37

Increased 11.43

Increased 11.8

Increased 11.84

Increased 12.41

None 0

The driver is male, younger than 56 years, driving a heavy-weight car, there is at least material damage, police visited the scene and the policy was opened less than 2 years ago.

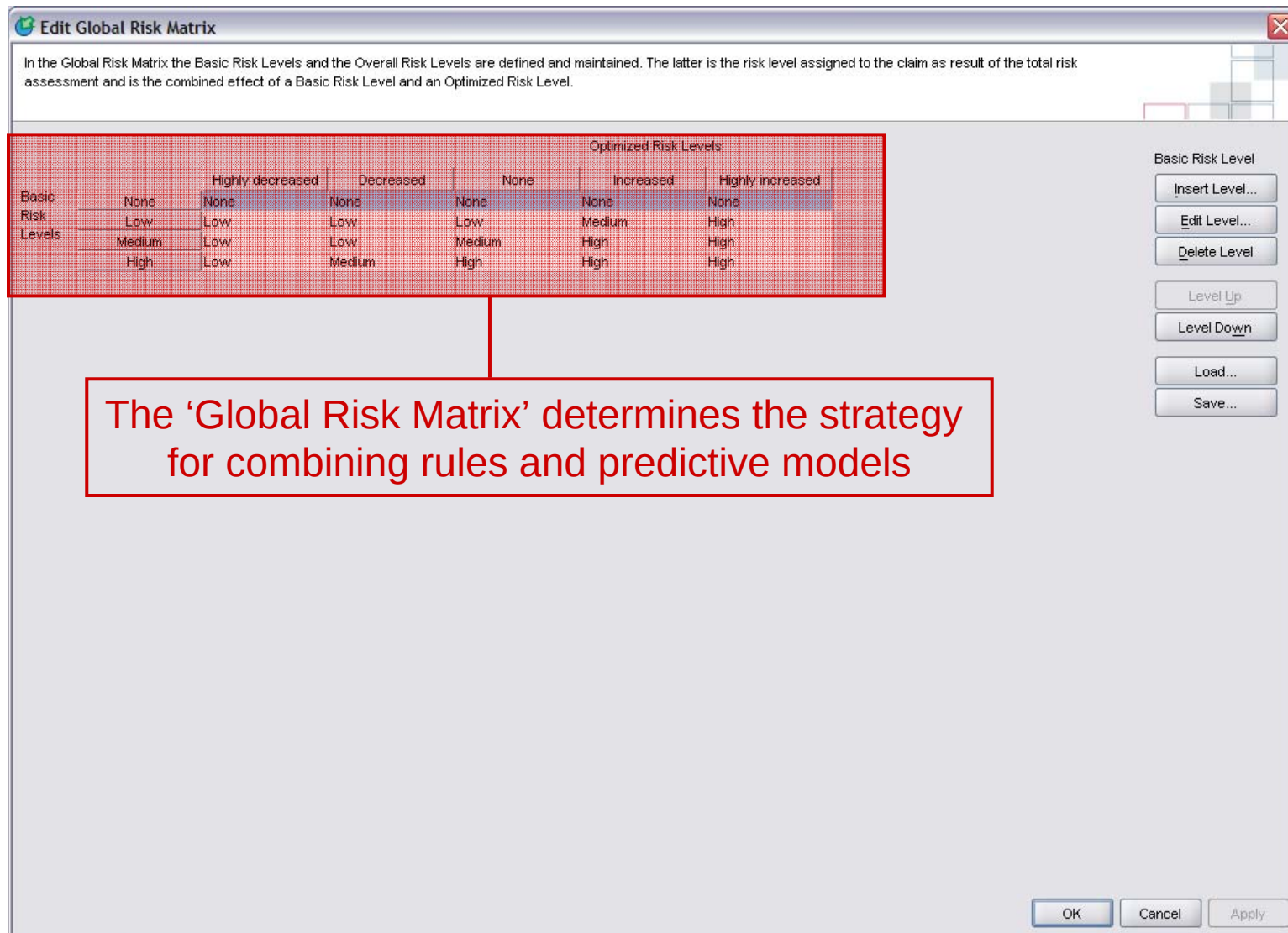
Model is evaluated as List model.

OK Cancel Apply

Clementine predictive model combines with initial rules based risk assessment to produce optimized risk level

Impact of Clementine model on initial rules assessment determined by fraud probability

> Strategy for Combining Rules and Models to Prioritize Claims for Investigation



> Global risk matrix

Predictive modeling
→

Business rules
↓

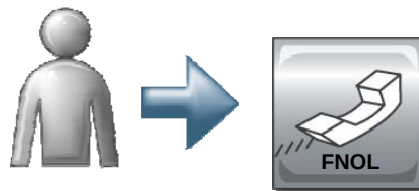
	Decreased risk	None	Increased risk
Low	Low	Low	Medium
Medium	Low	Medium	High
High	Medium	High	High

> More Examples:

Service Recommendations
Customer Complaints



> Service Recommendation



Customer	Fraud Risk	LTV	Cust Sat	Complaint	% Churn
Mr John Smith	Low	Gold Segment	1.59	Y Time to respond	82%



“Mr Smith, as a valued and loyal customer I am delighted to inform you that we can fast track your claim today and can provide you a choice of repairer within 5 minutes of your home ... “

“ We have CRS who are 3 miles away, Repair Centre who 2.5 miles away and BRC who are 1.5 miles away.
Our recommendation would be CRS ... “

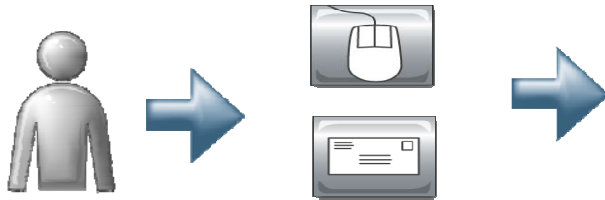


Approved Repairer	Av. Lead Time	Av. Repair Time	Av. Satisfaction Score	Distance
CRS	3 days	4.5 days	89%	3 miles
Repair Centre	5 days	4 days	74%	2.5 miles
BRC	7 days	5 days	71%	1.5 miles



> Complaints

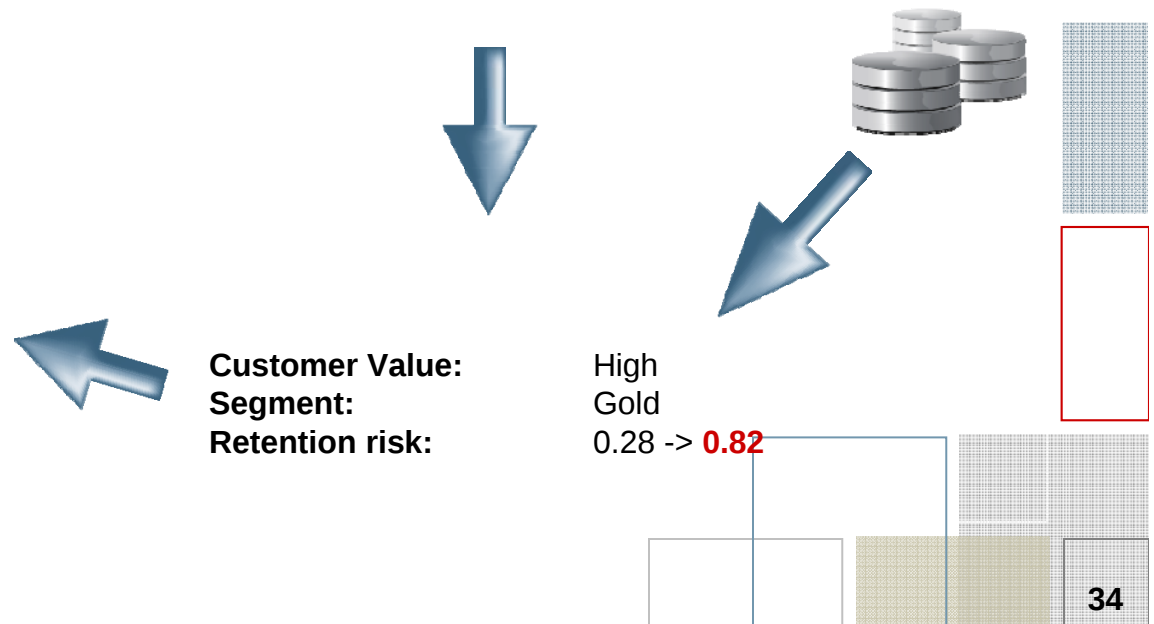
SPSS



To: customer_service@xyzinsurance.com
From: lgoodwin@btinternet.com
Subject: **Payment delays**

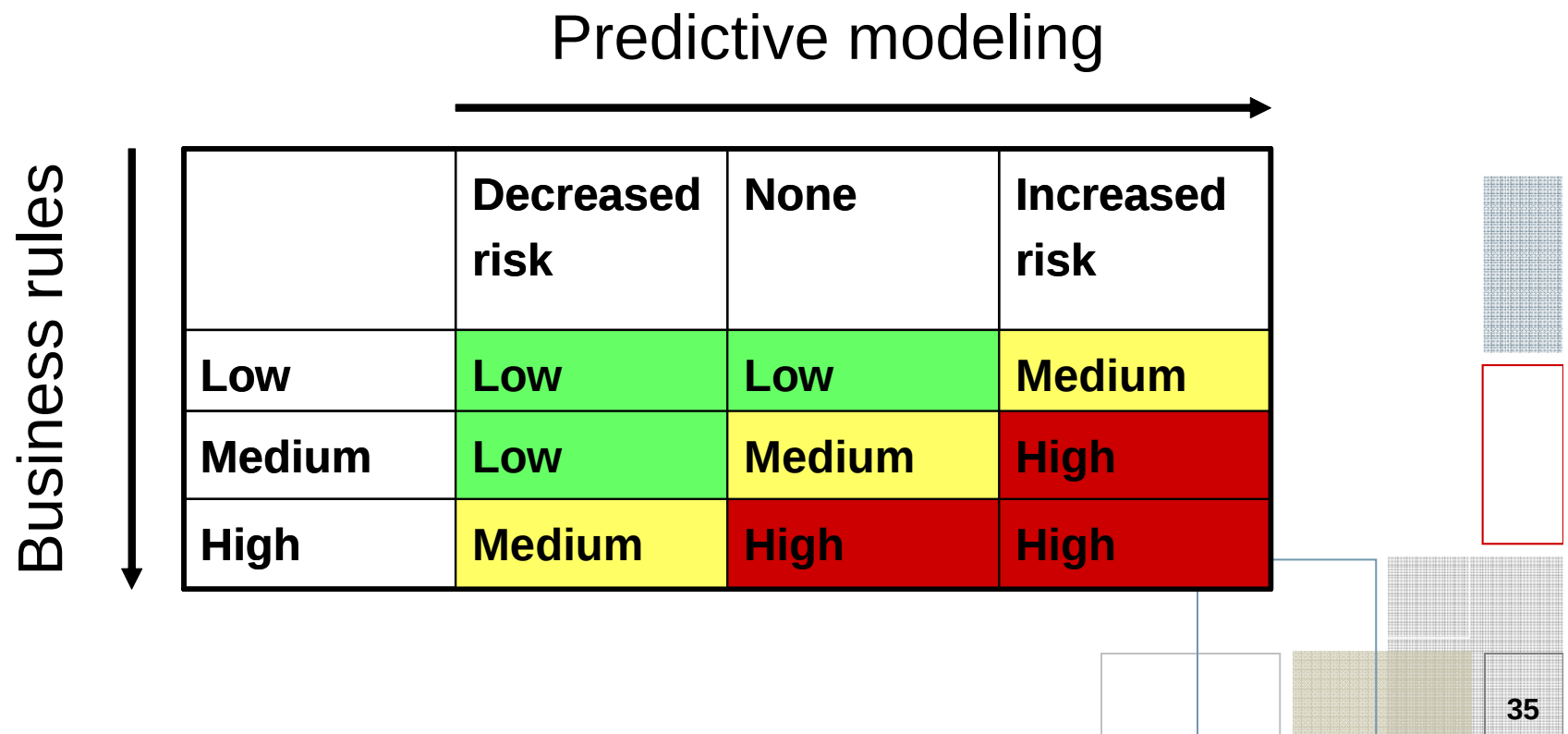
I want to let you know that I am **extremely unhappy** about the **length of time** it has taken for you to **provide payment** in respect of my claim number RG546D3. This seems to me like a perfectly straightforward claim, yet despite repeated assurances that it was being processed it took over seven weeks before I received a cheque.

“Hello Mrs Goodwin, this is Sarah Michaels from the XYZ Insurance customer relations team. I’m sorry to hear you had to wait so long for settlement of your claim recently. What I’ve done is to subscribe you to our on-line self service portal where you track the status of any future claims. This is a premium service and normally there’s a fee associated with it, but as you’re a valued customer and you’ve had this issue we’ve waived that in your case. “



> Components of the solution

- Business rules
- Predictive models
- Context data

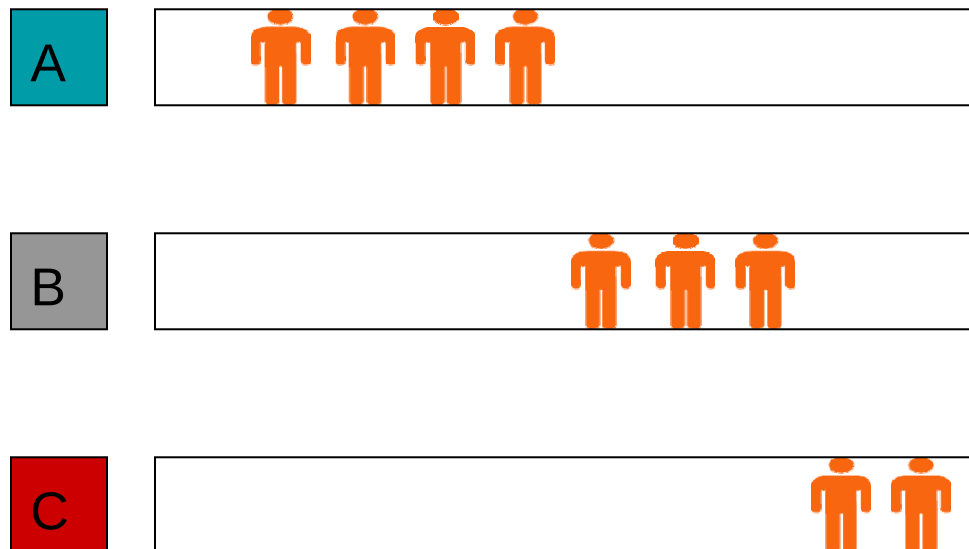


> In Action:

Optimizing Outbound Mail Campaigns



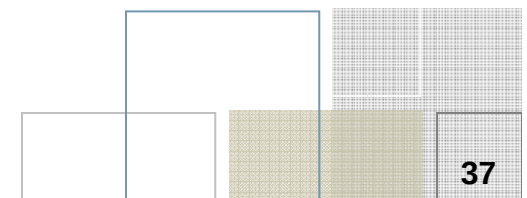
> Multiple Campaigns: Traditional Approach



- Prioritize products
- Select best customers per campaign

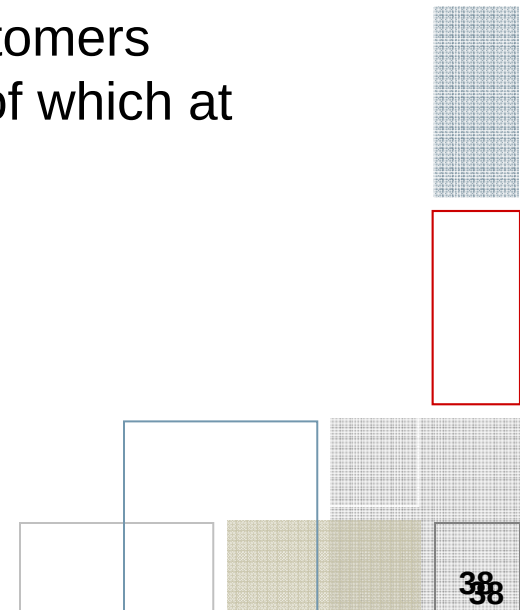
Disadvantages:

- Tedious manual process
- Not the best offer per customer:
around 25-50% of potential value is lost

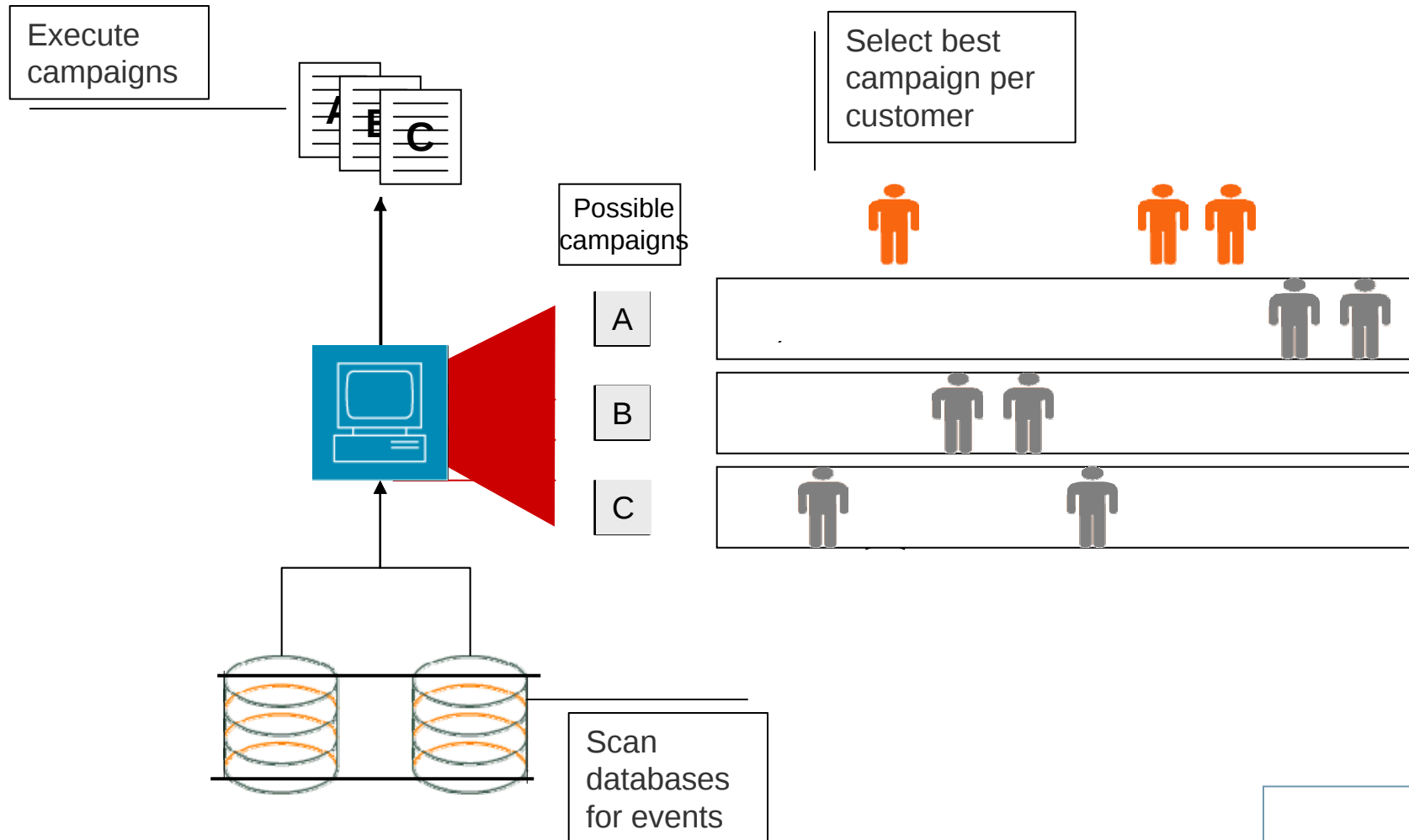


> Other Challenges: Choices and Constraints

- Offers
 - Sell at max 1000 product A
 - Offer product A only when available
- Channels
 - Email costs less than direct mail, but might be less effective for some customers
- Customer
 - Do not make offers to black-listed and opt-out customers
 - Make at most 2 offers per month to the customer of which at most one phone call

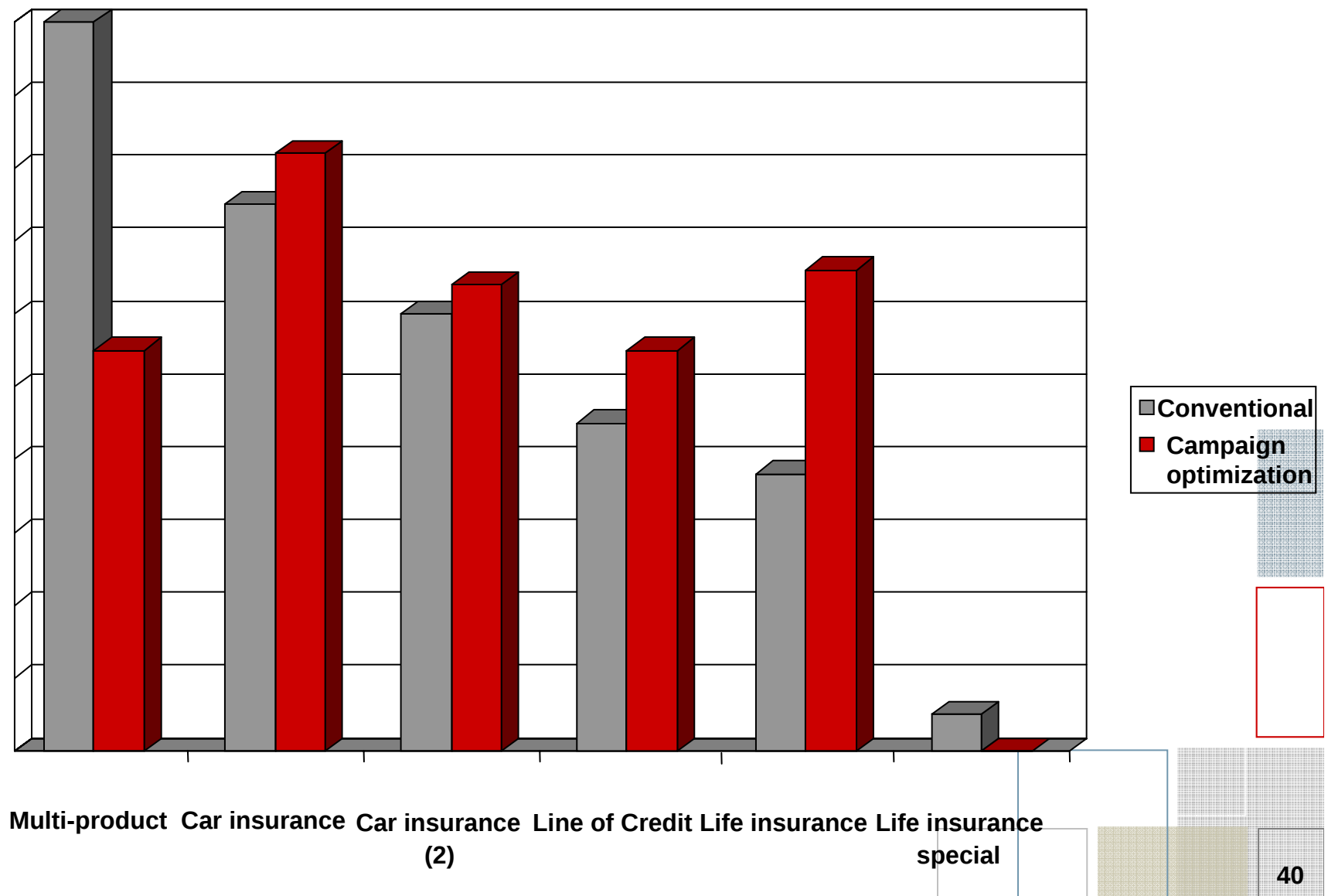


> Campaign Optimization (outbound)



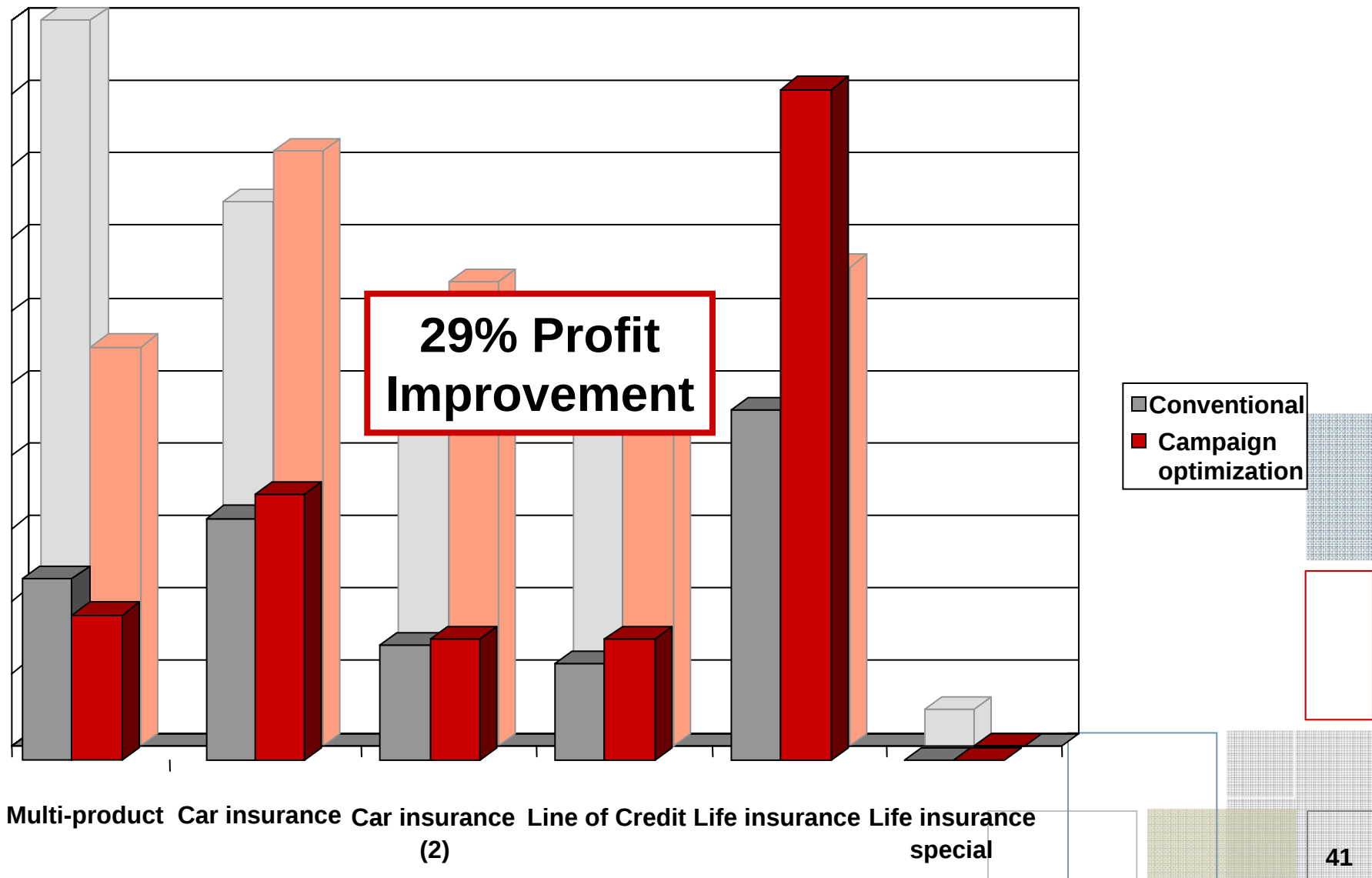
> Campaign Optimization Results: Mailing Volumes

SPSS



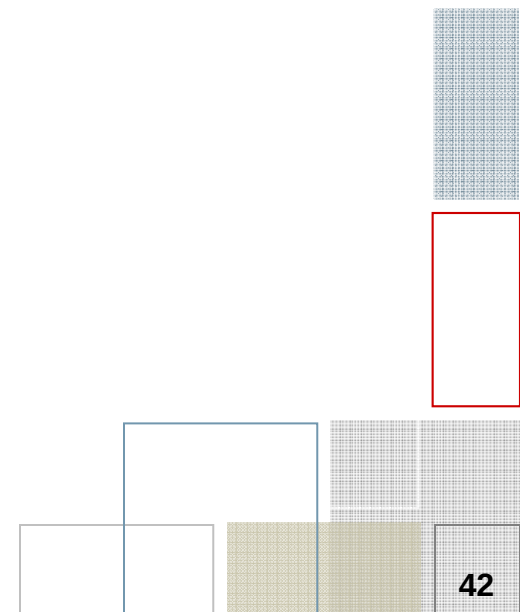
> Campaign Optimization Results: Profit per Campaign

SPSS



> Components of the solution

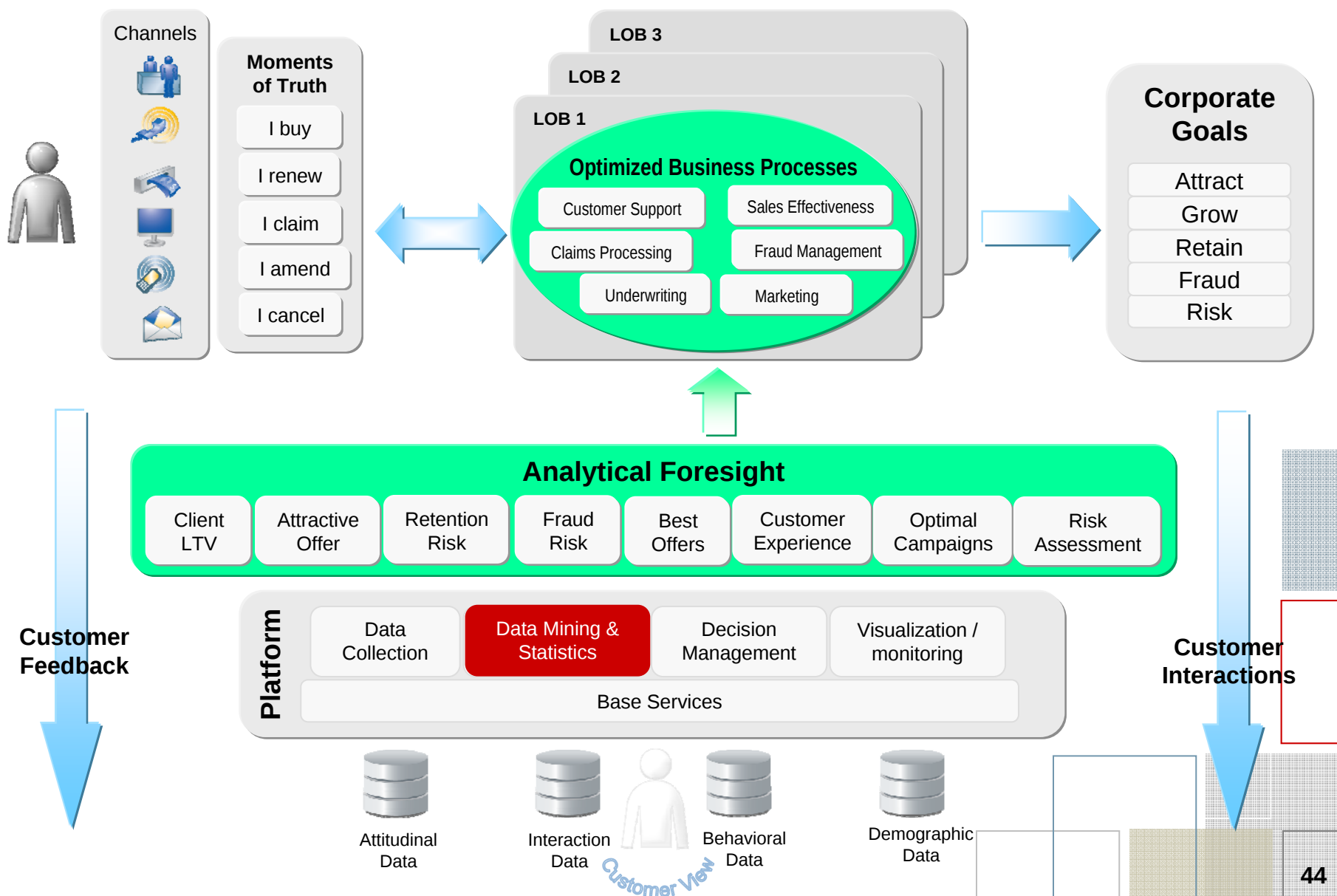
- Business rules
- Predictive models
- Mathematical Optimization



> Infrastructure for Deployment



> Predictive Enterprise



> SPSS Product Families

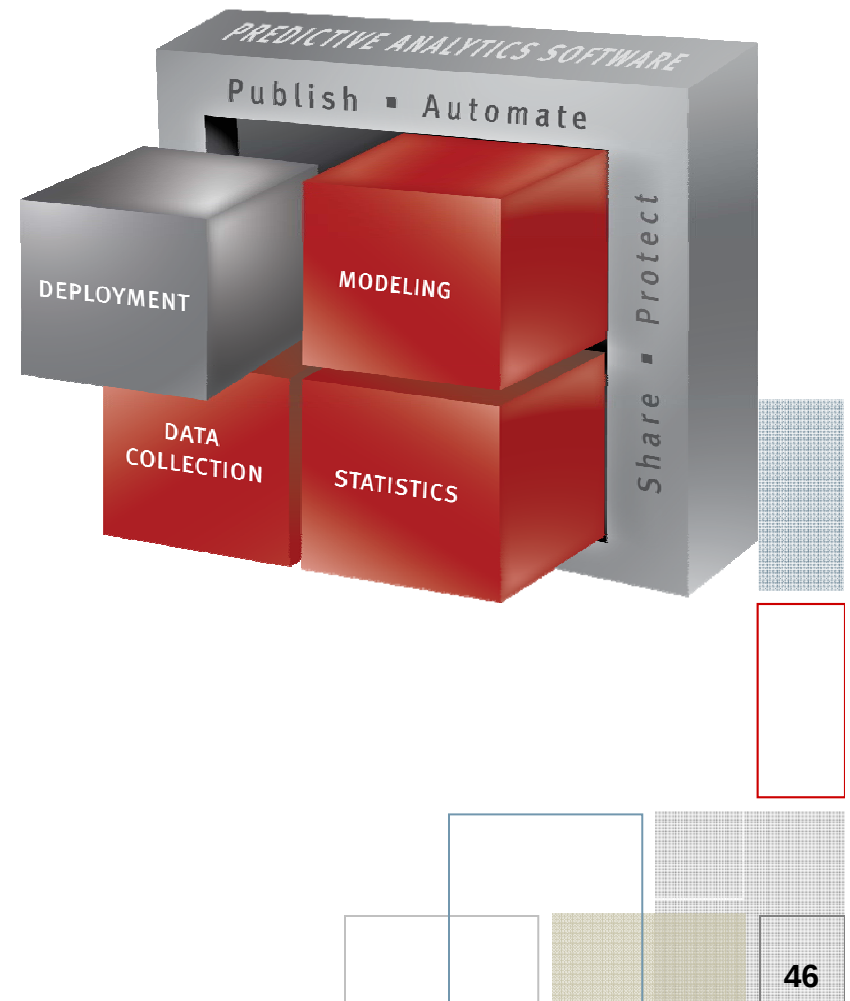


- Data Collection:
 - Delivers an accurate view of customer attitudes and opinions
- Statistics:
 - Drive confidence in your results and decisions
- Modeling:
 - Bring repeatability to ongoing decision making
- Deployment:
 - Maximize the impact of analytics in your operation



> Deployment Family

- Maximize the impact of analytics in your operation
 - Balance business reality with analytical results when automating decisions
 - Integrate results like reports, output, and predictions into the heart of your business



> Decision Management Tools

Risk Control Builder, Interaction Builder and Event Builder

Basic Risks Casualties

#	Use	Segment	%Fraud	Optimized Risk Level
0	☒	Model CLAIM_TYPE, TPR_CASE CLAIM_TYPE = "Only material" TPR_CASE = "Chain collision"	1.08	Decrease
1	☒	CLAIM_TYPE	28.47	Decrease

Edit Global Risk Matrix

Optimized Risk Levels

		Decrease	None	Increase
Basic Risk levels	Low	None	Low	Medium
	Medium	Low	Medium	High
	High	Medium	High	High

Combine business knowledge with analytical findings to recommend actions

Prioritize based on predicted behavior and business objectives

> Decision Management Tools

SPSS

ABC
Claim Application

Claim ID: [Notify New Claim](#)

Welcome > [Notify Claim](#) > [Risk Prescore](#) > [Loss Details](#) > [Create Claim](#) > [Risk Score](#) > [Handoff](#)

[Welcome](#)
[Notify Claim](#)
[Risk Prescore](#)
[Loss Details](#)
[Create Claim](#)
[Risk Score](#)
[Handoff](#)

[Loss Type](#)

[Loss Details](#)

Date:
Time:
Accident Type:
Location:
Driver:
Loss Type:

[Responsibility](#)

Notification by Insured:
Insured agreed TPR:
Responsibility of Insured:
[Other](#)
Third Party Case:
Police Notified:

[Get SPSS Risk Score:](#) ☒ ☒ ☒ ☒ ☐ 4 Indicators: Please pass to Investigations

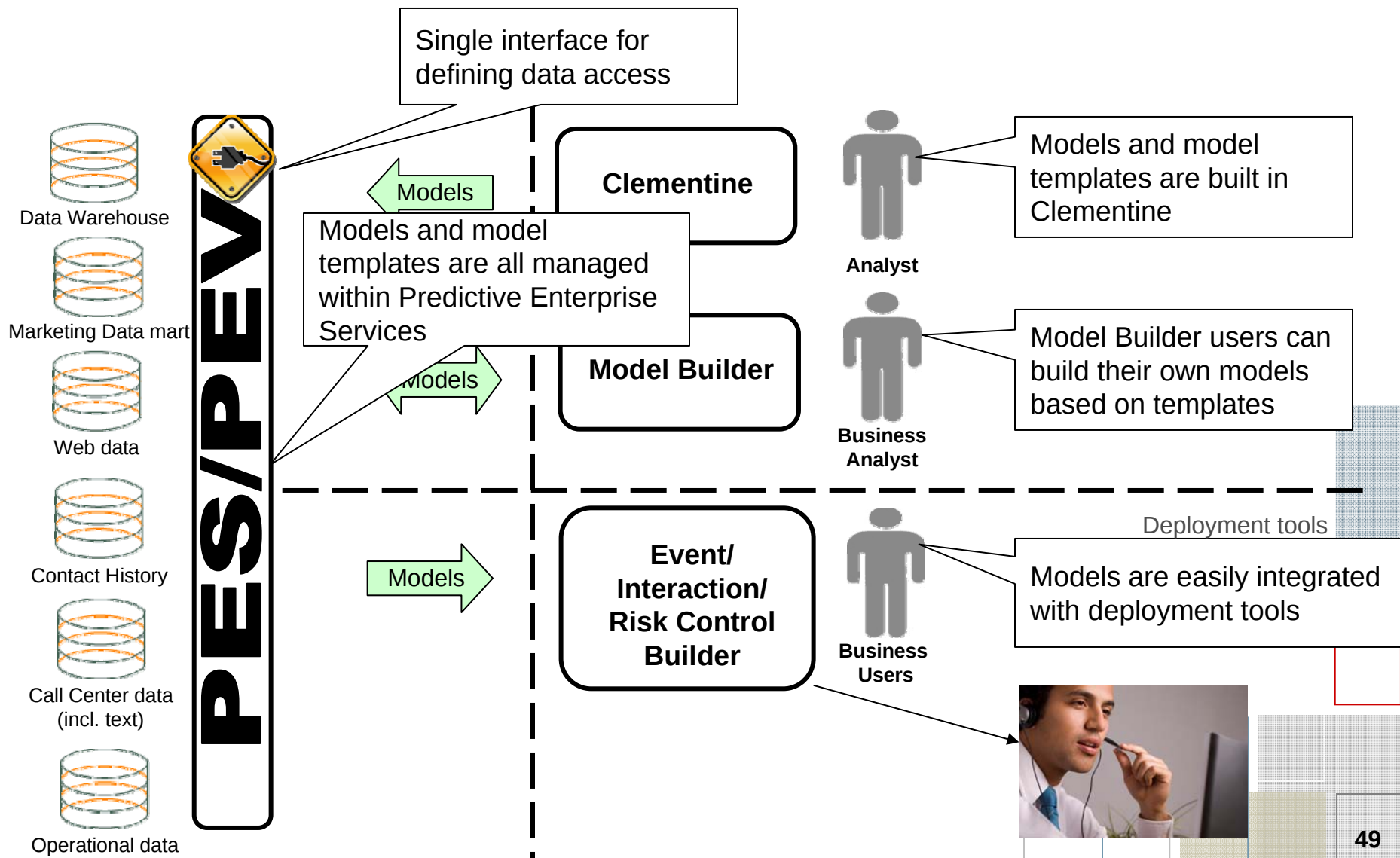
- * Personal injuries, no police present
- * The accident took place at night
- * No witnesses
- * Caused by a natural phenomena

Done

Integrate results into business systems to
improve performance

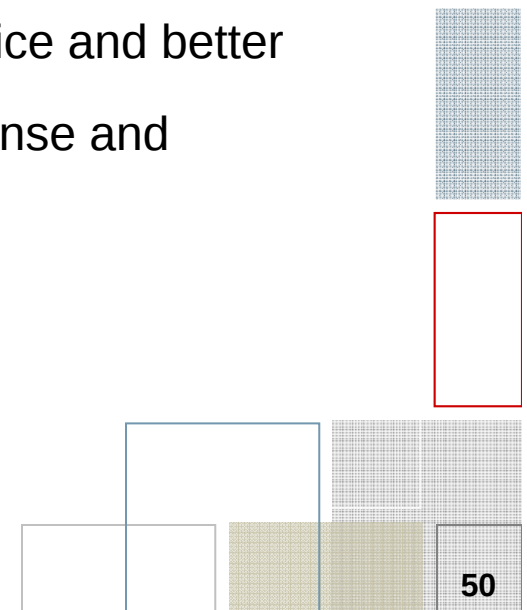
48

> Decision Management Tools Infrastructure

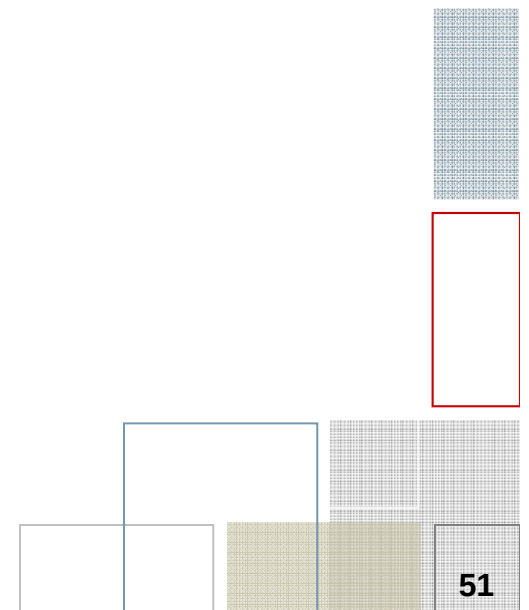


> Recap

- Decision automation and deployment
 - Making recommendations to enhance decisions in business processes
 - Operational decisions – front line, high volume
- Optimized decisions
 - Recommendations based on predictive models and business rules, using business goals to arbitrate
- Examples of real ROI
 - Processing insurance claims - enhanced customer service and better targeted fraudulent activity
 - Marketing - drive better targeting which increases response and minimizes costs
- Infrastructure for deployment
 - Important for integration and management



> Q&A

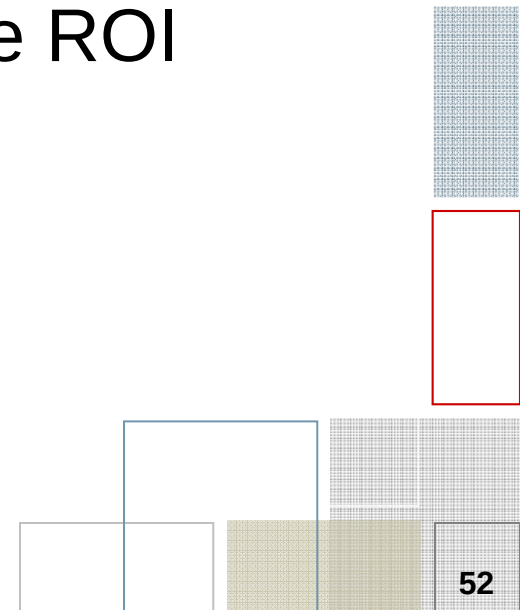


> The Takeaway

Delivering optimized recommendations for decisions

...integrated within existing business processes and operational systems

...creates real value and measurable ROI



> Contact Information

SPSS

- **Sales questions and pricing**

1.800.543.2185

sales@spss.com

- **Speaker Information**

Kathy Konkel

Product Marketing

SPSS Inc.

800.543.2185 x 3233

kkonkel@spss.com

Website: www.spss.com