

Building an Analytics Driven Culture

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Pinnacle Actuarial Resources, Inc.
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About the Presenter



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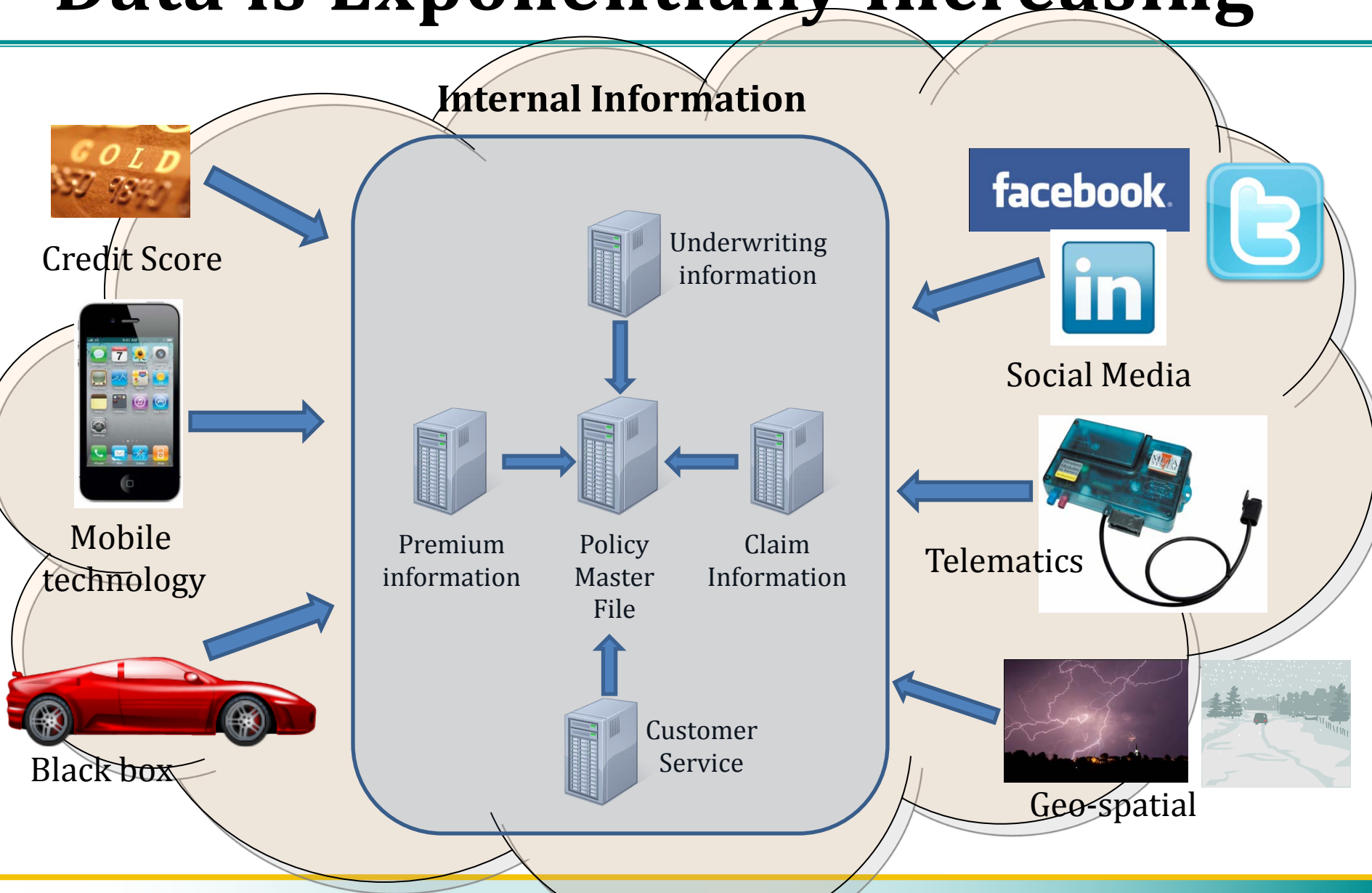
Roosevelt Mosley has 18 years of actuarial experience including 12 years of experience developing and deploying predictive analytics solutions for a variety of insurance company applications. Roosevelt's predictive modeling credits include numerous industry presentations, articles and monographs.

Analytics Driven

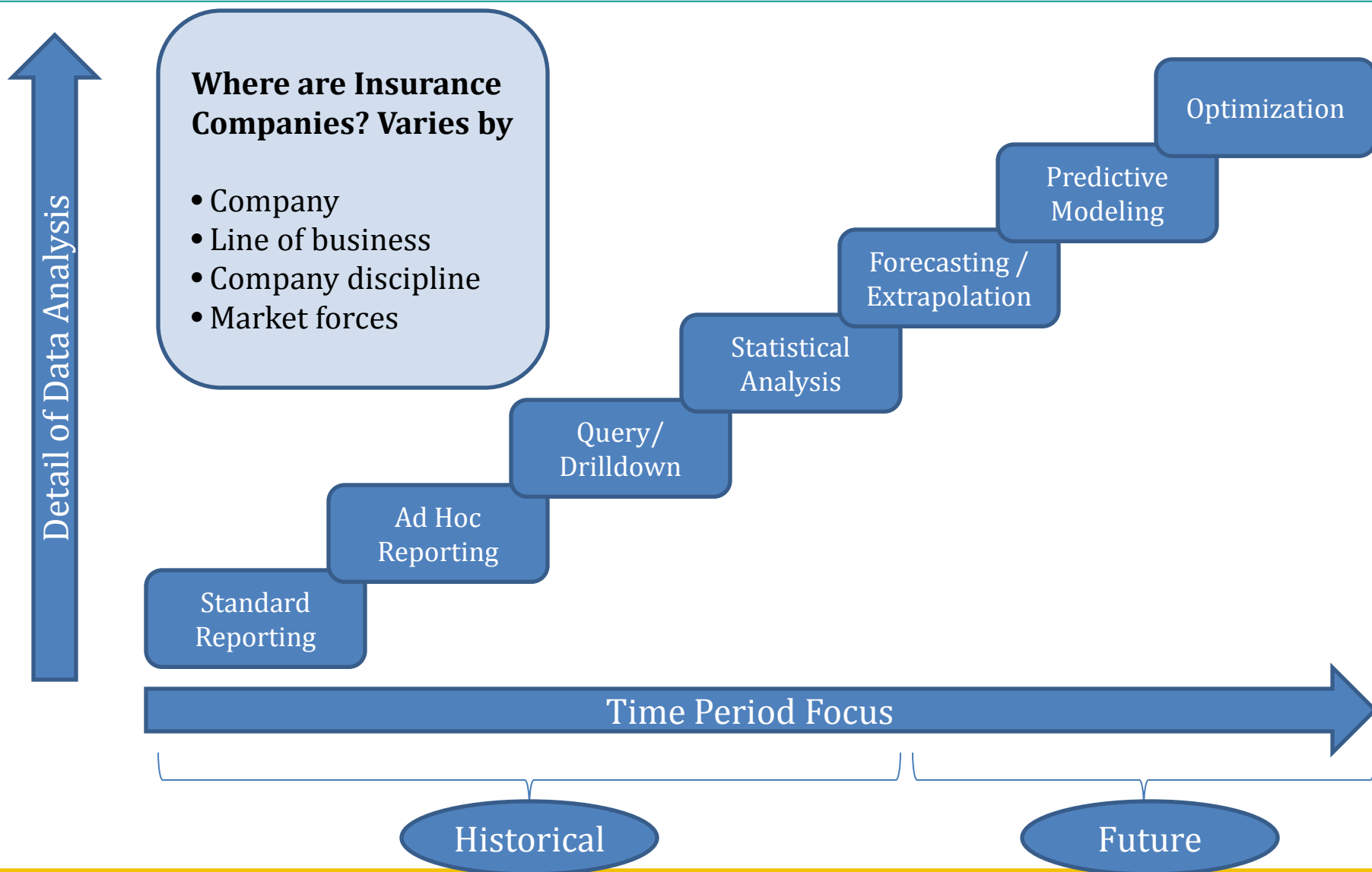
- Analytics is being used in many property & casualty insurance companies
- Use of analytics has produced significant benefits for insurance companies
- As analytics mature, successful companies will move from the use of analytics to being analytics driven

The Use of Analytics

Data is Exponentially Increasing



Business Intelligence and Analytics



Benefits of Analytics

Benefits of Analytics

- Present a truer representation of business realities using data and information
- Smarter decisions
- Identify profitable long term customers
- Competitive advantage
 - Improved financial results
 - Profitable growth

Tangible Results

- Benefits
 - Increased production
 - Improved loss experience
 - Improved customer insight
 - Knowledge transfer
- Dependent on:
 - Scope of analysis
 - Implementation plan
 - Corporate culture

Private Passenger Auto Market Share

Profitable Growth

Rank	Group	Difference From Market											
		2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997
1	00088 State Farm Group	1.9%	-0.6%	-0.2%	-3.1%	-4.3%	-1.7%	1.8%	6.5%	-5.0%	-4.6%	-3.8%	-4.5%
2	00008 Allstate Insurance Group	-3.2%	0.3%	0.4%	5.8%	3.3%	-3.7%	-6.2%	-5.0%	-3.2%	-1.5%	0.3%	-0.4%
3	00811 Berkshire Hathaway Ins Group	7.0%	5.8%	9.5%	12.2%	10.4%	7.9%	2.4%	-1.1%	15.3%	17.4%	14.8%	11.3%
4	00780 Progressive Insurance Group	-0.3%	-2.6%	-0.7%	3.1%	7.9%	18.4%	19.9%	4.0%	-1.7%	15.4%	12.2%	27.0%
5	00032 Farmers Insurance Group	0.0%	2.7%	0.4%	-2.4%	-0.7%	-8.0%	-10.2%	-8.2%	-1.4%	-1.2%	-2.4%	-5.2%
6	05987 Nationwide Group	-0.2%	0.4%	-0.3%	0.3%	-0.2%	-1.7%	-2.7%	1.3%	5.8%	6.4%	0.4%	1.2%
7	00060 Liberty Mutual Insurance Companies	1.1%	1.2%	-2.8%	-3.7%	3.0%	62.1%	2.4%	-1.4%	3.7%	22.5%	0.8%	-1.3%
8	04080 USAA Group	5.1%	0.2%	3.1%	1.0%	-3.0%	0.8%	3.4%	2.9%	7.5%	4.6%	-2.8%	-1.3%
9	18540 American International Group	-8.4%	-4.4%	0.6%	5.2%	2.5%	0.7%	3.5%	-1.9%	11.3%	42.3%	10.0%	-3.2%
10	00124 American Family Insurance Group	-3.1%	0.8%	-1.9%	-0.6%	1.2%	2.4%	5.8%	0.0%	2.1%	5.3%	7.8%	4.5%
11	18674 Travelers Group	1.5%	1.4%	2.9%	-1.0%	6.7%	-8.0%	-10.2%	-8.2%	-1.4%	-1.2%	-2.4%	-5.2%
12	00048 Hartford Insurance Group	-1.6%	2.0%	3.9%	3.4%	4.0%	-9.7%	-4.3%	1.0%	6.0%	9.9%	10.1%	-1.4%
13	04524 Mercury General Group	-7.4%	-2.4%	1.6%	9.4%	11.8%	12.1%	18.4%	4.7%	-3.6%	2.4%	5.4%	27.6%
14	18515 Auto Club Enterprises Insurance Group	-0.4%	-1.7%	3.5%	6.2%	-0.8%	17.1%	5.7%	-2.9%	7.7%	6.7%	2.6%	3.7%
15	18552 MetLife Auto & Home Group	-1.3%	0.5%	-1.8%	-2.1%	-3.9%	-6.0%	2.9%	9.1%	8.5%	-0.8%	-1.0%	-0.8%
16	04283 Erie Insurance Group	1.6%	-0.4%	-6.3%	-3.6%	2.3%	5.2%	9.4%	2.3%	1.3%	-3.8%	-0.6%	2.4%
17	18460 California State Auto Group	-5.3%	2.0%	1.4%	2.7%	-0.7%	-2.6%	-2.7%	-4.4%	0.6%	-3.6%	-4.4%	1.8%
18	02966 Commerce Group	-7.3%	-2.9%	-2.8%	0.9%	6.7%	11.9%	10.7%	-2.6%	10.7%	6.8%	-0.1%	0.1%
19	00914 Unitrin P & C Insurance Grp	10.3%	7.0%	-1.7%	-1.3%	24.4%	-8.0%	-10.2%	-8.2%	-1.4%	-1.2%	-2.4%	-5.2%
20	18431 GMAC Insurance Group	-7.5%	-6.8%	-5.5%	2.4%	-0.6%	12.5%	-0.3%	-5.3%	1.2%	-3.0%	-15.7%	-7.8%

Private Passenger Auto Combined Ratio

Profitable Growth

Rank	Group	Difference from Industry										
		2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
1	00088 State Farm Group	-9.9	-6.0	-7.1	-3.3	-1.4	-3.0	-20.5	-24.2	-22.6	-16.0	-20.4
2	00008 Allstate Insurance Group	6.0	5.9	7.0	3.8	2.1	3.5	-3.2	-2.5	-6.2	-3.7	-6.1
3	00811 Berkshire Hathaway Ins Group	5.3	5.2	6.5	6.0	3.5	3.9	3.1	2.6	-7.0	-7.5	-5.8
4	00780 Progressive Insurance Group	4.2	3.7	6.4	6.9	6.5	9.7	3.3	2.5	-6.5	-3.4	-4.1
5	00032 Farmers Insurance Group	0.4	-2.5	-5.0	-1.6	-5.2	-3.3	95.7	99.3	99.2	94.0	88.0
6	05987 Nationwide Group	-2.9	-5.9	-2.0	-7.4	-3.8	-1.5	-0.5	-7.3	-7.4	-10.1	-13.7
7	00060 Liberty Mutual Insurance Companies	-3.4	-0.1	-1.3	-0.8	-4.7	-3.3	-11.6	-10.8	-9.3	-8.5	-10.5
8	04080 USAA Group	3.6	-3.8	0.1	0.0	3.7	7.9	-1.1	-4.1	-9.3	-18.3	-28.1
9	18540 American International Group	-1.4	-0.1	5.1	-16.1	0.2	6.3	4.0	1.8	1.2	-4.4	0.9
10	00124 American Family Insurance Group	-3.3	-4.7	-8.4	1.9	-3.5	-2.2	-3.0	-2.0	-2.6	-5.5	-8.8
11	18674 Travelers Group	-1.2	2.9	3.0	8.0	0.7	1.4	95.7	99.3	99.2	94.0	88.0
12	00048 Hartford Insurance Group	6.4	-0.9	-0.9	-3.3	-2.2	3.2	-4.8	-6.6	-2.3	-7.7	-9.1
13	04524 Mercury General Group	-2.7	0.7	-2.8	2.7	2.8	4.2	-2.3	-0.3	0.4	-0.3	-0.6
14	18515 Auto Club Enterprises Insurance Group	5.0	0.8	-2.0	3.3	3.5	-0.8	-6.2	-9.2	-6.1	-7.2	-17.8
15	18552 MetLife Auto & Home Group	11.9	7.1	6.6	1.0	-3.8	-5.2	-6.3	-7.6	-8.5	-5.3	-9.8
16	04283 Erie Insurance Group	5.0	5.9	-2.3	-6.7	-7.5	-8.5	-29.3	-14.0	-3.9	-3.4	-10.7
17	18460 California State Auto Group	-1.9	-4.5	-6.9	1.1	-4.1	-3.0	-11.4	-13.8	-20.3	-9.8	-23.5
18	02966 Commerce Group	2.6	3.3	5.2	6.9	7.2	4.4	-3.6	1.5	3.4	-7.4	-11.2
19	00914 Unitrin P & C Insurance Grp	-4.2	-7.3	-6.8	-5.6	-18.5	-5.7	95.7	99.3	99.2	94.0	88.0
20	18431 GMAC Insurance Group	-8.4	-1.7	-8.4	-9.0	-11.1	-8.7	-10.3	-15.0	-1.4	-11.2	-15.5

However, There Still are Analytics Challenges

- Limited use
- Silo's
- Data
- Implementation
- Balance
- Buy-in

The Transition: Building an Analytics Driven Culture

Characteristics of a Analytics Driven Culture

Complete

- Across all departments in an insurance company
- Translation of analytics to application
- Allow data to define analytics as well

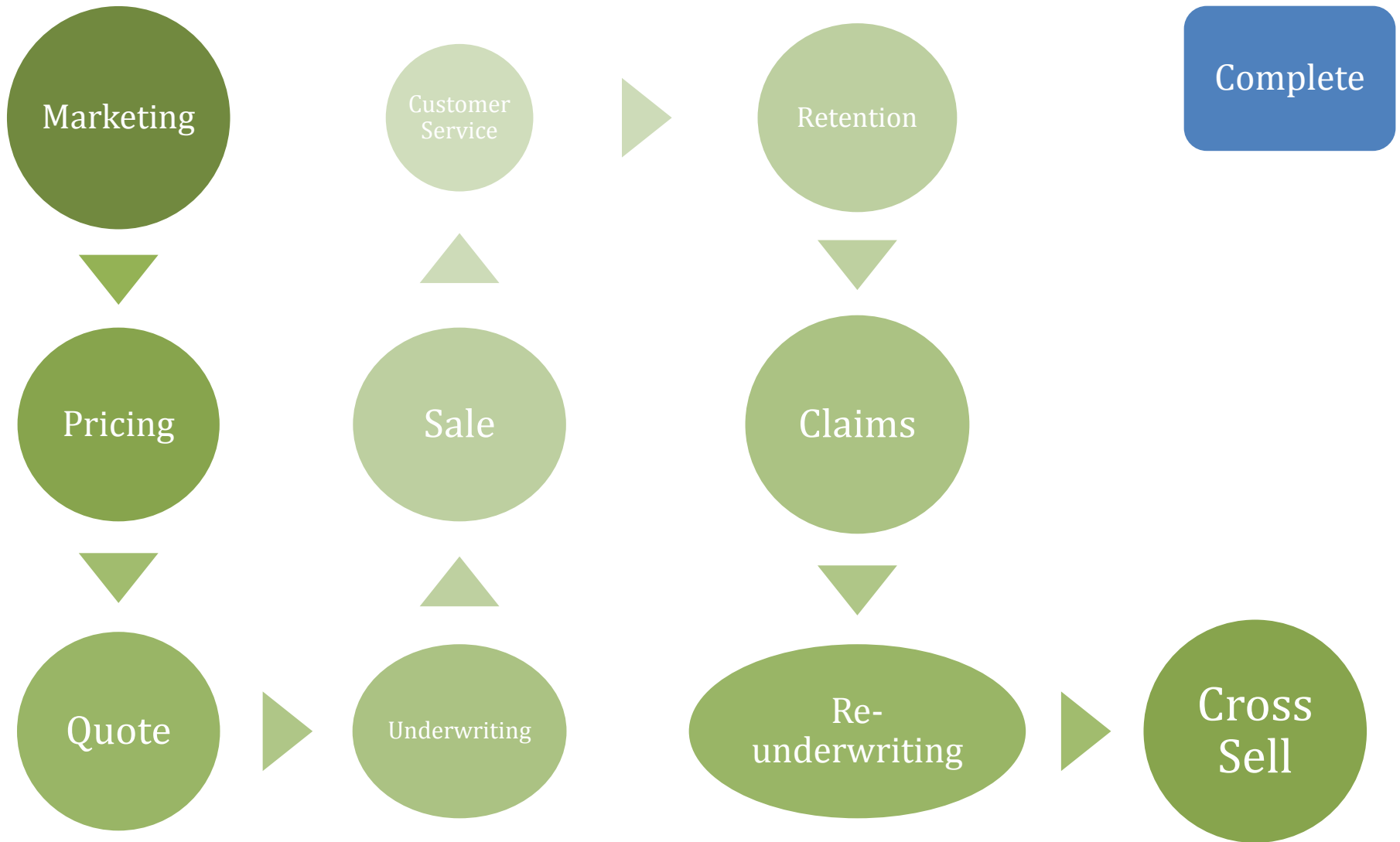
Consistent

- Analytics should be moving company in the same direction
- Analytics by different areas should be coordinated

Intentional

- Begin with the end in mind
- Data collection, data processing, analytics, and implementation all reflect purpose

Apply Analytics to All Insurance Functions



Marketing Analysis

Analyses

- Model the likelihood of a potential risk contacting company for a quote
- Measure characteristics of shoppers/quoters
- Measure likelihood of insureds responding to marketing initiatives
- Measure the likelihood of a risk responding to a cross-sell contact
- Measure advertising effectiveness

Data

- Internal company information
- External demographic information
 - ZIP code level
 - Individual/household level demographics
- Credit profiles
- Marketing efforts
- Focus groups

Goal: Determine which potential customers to target, how to effectively target them

Underwriting

Analyses

- Straight through processing
- Selection/rejection
- Target report ordering
- Action indicators
- Vehicle inspection/re-inspection
- Home inspection/re-inspection
- Renewal likelihood

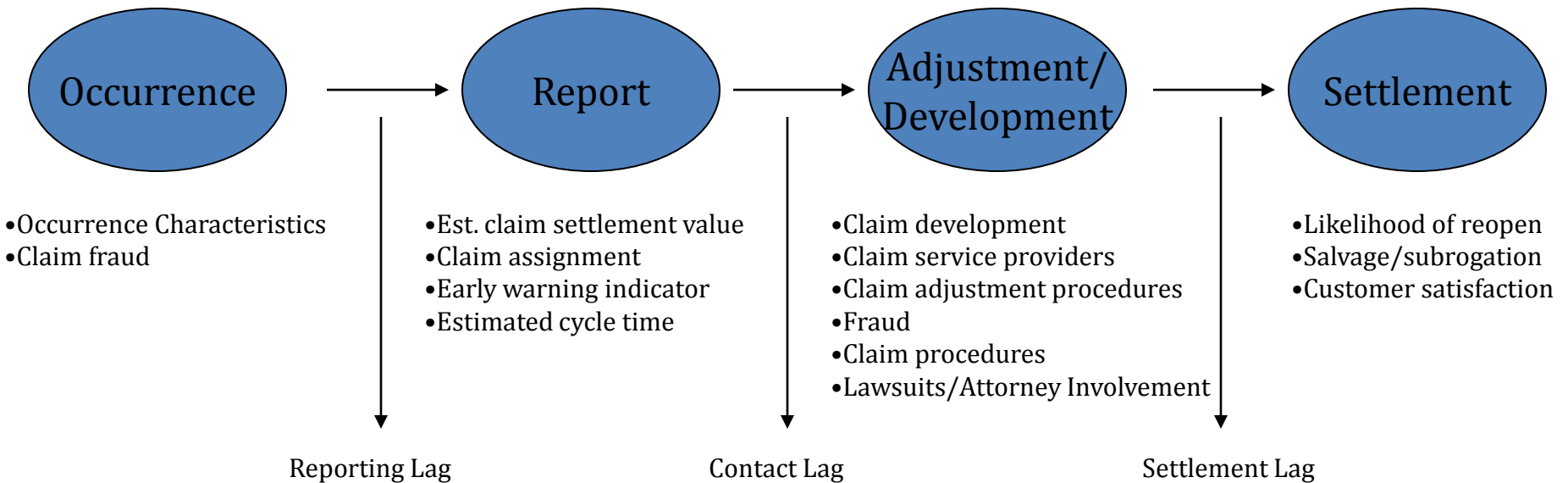
Data

- Historical underwriting actions
- Underwriting criteria
- Credit reports/scores
- MVR report data
- CLUE report data
- Home inspection reports
- External data feeds
 - Property characteristics
 - Carfax
 - Demographic

Pricing

- Rating enhancements
- Vehicle classification
- Custom insurance scores
- Territory Definition
- Homeowner by peril pricing
- Expanded SDIP
- Tiering plans
- Scorecards
- Usage based insurance
- Price optimization

Claims



Data

- Geography (State or Regional Courts)
- Time (Inflation, Settlement Lags)
- Claimant Characteristics (Age, Class)
- Insured Characteristics (Vehicle Weight)
- Attorney Involvement
- Preferred Claim Network (Medical, Glass, Auto Repair, Attorney)
- Other Claims Features (Arbitration/ADR, Settlement Lag)

Apply Multiple Analytics Techniques

Data Exploration

- Clustering/segmentation analysis
- Principal components
- Association analysis
- Self - Organizing Maps
- Variable clustering
- Variable selection

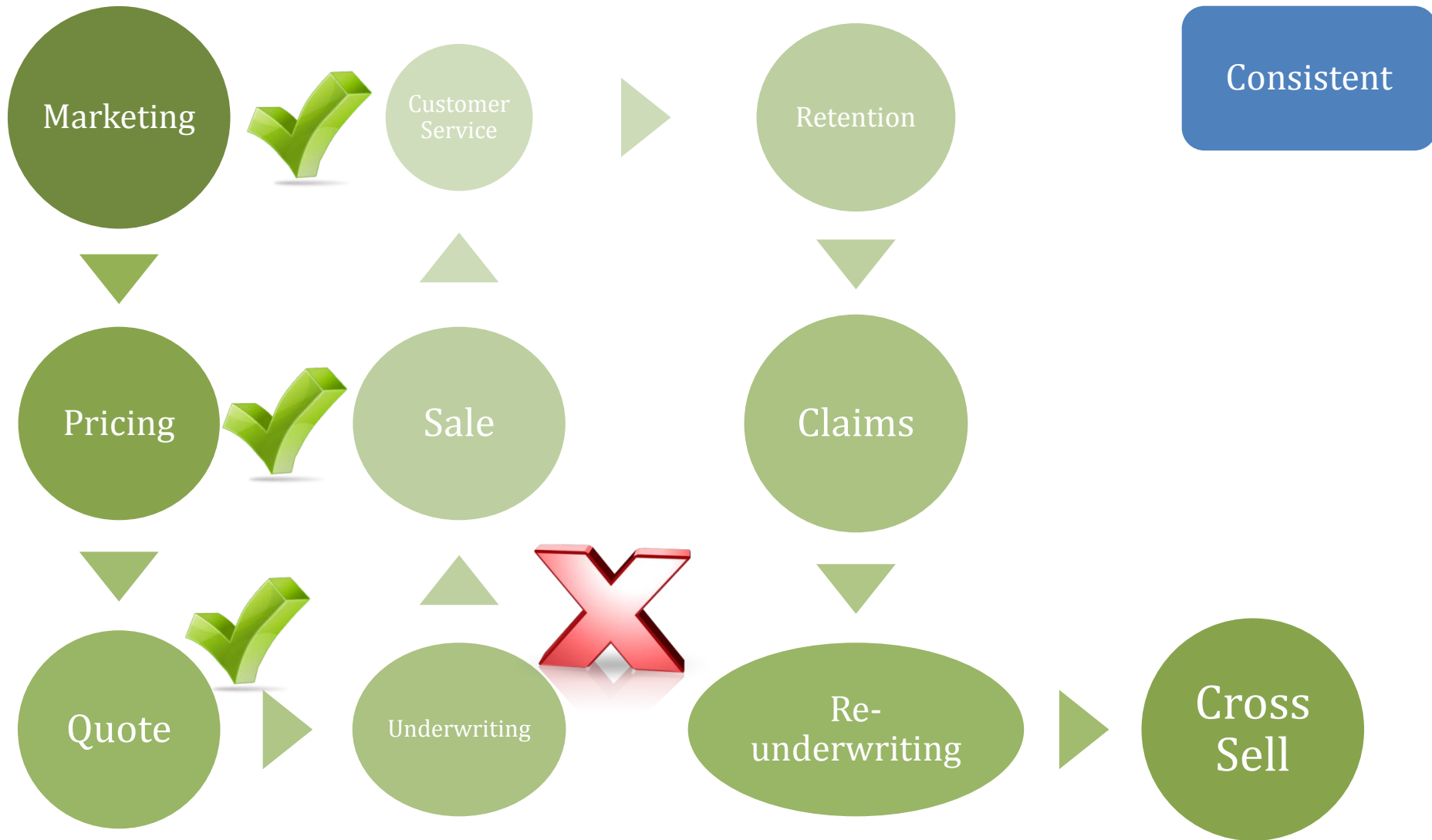
Predictive Models

- Decision trees
- Neural networks
- Clustering
- Principal components
- Association analysis
- Rule induction
- Generalized linear models

Considerations

- Purpose
- Application
- Technical considerations

Ensure Analytics Consistency



Ensure Analytics Consistency

- Executive level responsibility for analytics
- Consistency of analytics knowledge
 - Analytics research center
 - Internal analytics user group
- Collaboration on analytics projects

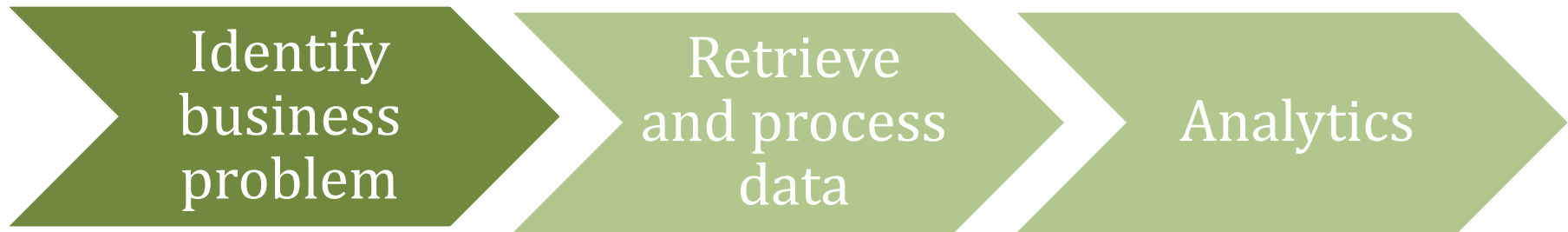
Process Data Intentionally

- Data historically collected for a number of different purposes – not analytics
- Creates challenges
 - Missing information
 - Incorrect data
- Intentional data processing
 - Identify the right data
 - Collect and store data consistently and accurately
 - Prepare data once for multiple applications

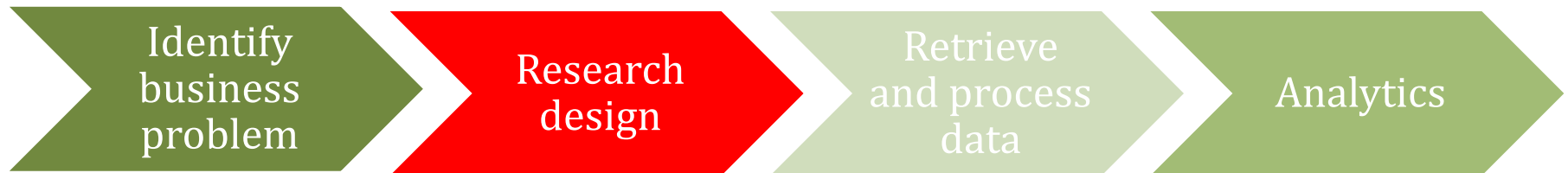
Intentional

Study Design

Typical Analytics Process



True Statistical Studies



Study Design

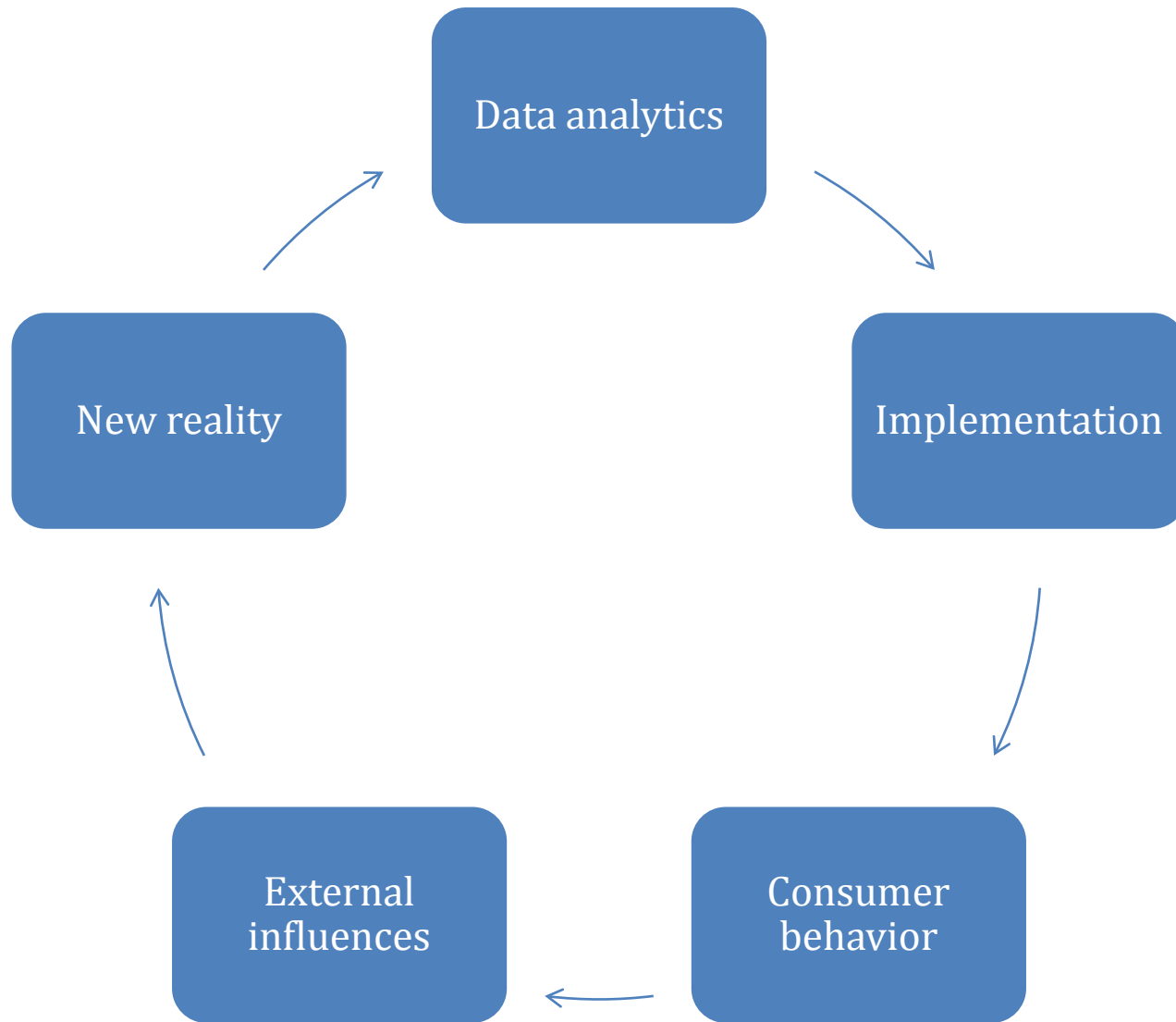
- Examples
 - Capital One
 - Amazon
- Insurance applications
 - Collect new data elements
 - Focus groups
 - Usage based insurance
 - Website testing



Balance Analytics and Interpretation

- Translate theoretical results to practical implementation steps
- Involve business units in study design and review of results
- Solicit input of those with practical experience
- Generate excitement, build consensus, achieve buy-in

Complete Commitment



Building an Analytics Driven Culture

More Complete

- Across all departments in an insurance company
- Translation of analytics to application
- Allow data to define analytics as well

More Consistency

- Analytics should be moving company in the same direction
- Analytics by different areas should be coordinated

Increased Intentionality

- Begin with the end in mind
- Data collection, data processing, analytics, and implementation all reflect purpose

Questions

Thank You!

- For additional information, visit www.pinnacleactuararies.com
- Specific follow up questions: rmosley@pinnacleactuararies.com
- Complete the **survey**



Personal Injury Protection Trends

Join **LeRoy Boison** as he discusses the PIP personal auto loss cost trends with a focus on the cost and utilization of PIP relative to other insurance coverages



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