P&C Industry Use of Visualization Technology to Applied Performance Management

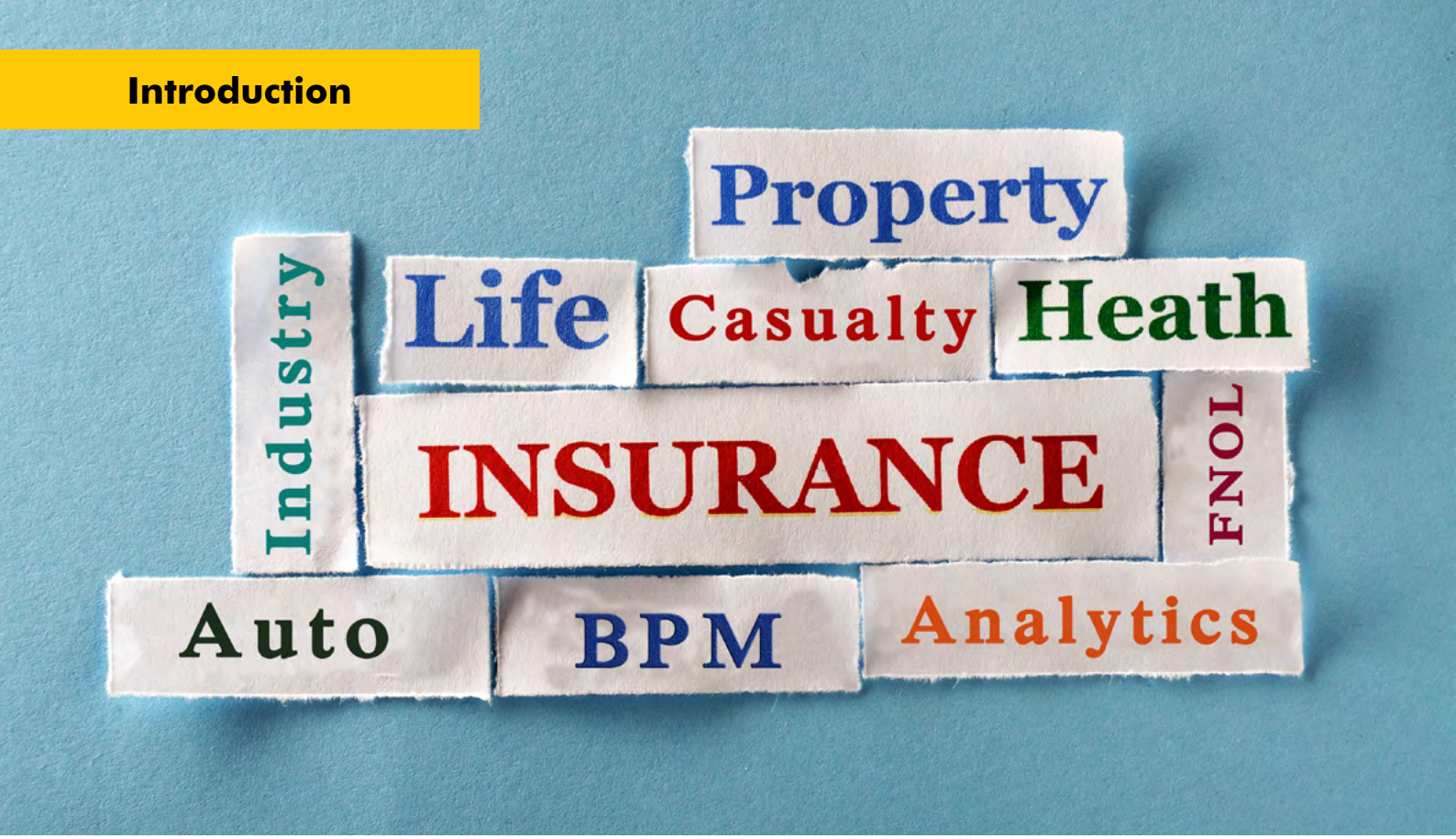
A White Paper

Property Casualty Insurance Industry Review: Service providers offer insurers visual/virtual data solutions that improve performance results.

Tom Everett,
Business Operations Solutions Leader

inniti alliance

Introduction



The Insurance industry needs service providers of Visual Data Solutions in order to perform or respond to their markets and consumers use of technology in the environment called the Internet of Things (IoT). All industry stakeholders – insurers, purchasers, policy or mutual fund owners, operations (policy administration, Claims, Underwriting, Service and Finance) and regulators are connecting their business relationships and lives through the internet.

The IoT is a paradigm change for the industry to operate and has a significant role in executing Applied Performance Management (APM) by insurers. A management approach to perfect business operations through rising attention to key performance measures that rely on visual or virtual data administration. As insurers rely on APM to be competitive with use of visualization applications it may well include new approaches that is called Data as a Service (DaaS). Data management is serviceable and insurers will be empowered with better understanding of all performance/financial metrics that can improve managing risk, protecting revenue and deploying competitive enterprise and or customer relationship management.

Overall, all insurance stakeholders will depend on the their level of adoption of visual/virtual technology to collect, aggregate, interpret and utilize multiple IoT data sources. That success will drive performance results of operations for an insurance company. How well the data is compiled and used will impact the performance if not balance of risk management, mitigation of premium to expense, competitive rates, and delivery of services.

Collect and Aggregate Technology Sources for Visualization

Insurers will use new service provider applications to access the data provided by customers from technology, including smart phones, wearables, industrial monitors and IoT-connected devices to add greater value.

Insurance companies and third party entities will carve out a competitive niche that differentiates themselves by the value of the relationship they add to their customers, as well as the flexibility of their premiums.

Those able to leverage data virtually to provide the best service will be the most successful.

In this new data-driven business environment insurers and policyholders will collaborate to create a partnership focused on improving overall quality of life. Even through such IoT organizations known as Block Chains.

For example, an insurer will be able to monitor automobile driving experience, and update risk assessment, predict future claims expense, and use premium dollars to change customer performance.

Visual Tools & Definitions

- Scorecards provide a high level single page overview of a long term basis.
- Dashboards provide a deeper level of key performance measures that impact higher level scorecard measures.

Use Statements	Scorecard	Dashboard
Who	Stakeholders	Management Staff
What	Strategy	Operations – Tactics
Accountability	Yes	No
Drill Down Capability	No	Yes
Informs Root Cause	No	Yes
Supports Outcomes & Improvements	Yes	Yes
Provides Actionable Data	Yes	Yes

Mainframes will remain as reliable platforms for visual/virtual data management, acting as high performing computing base, not server distributed architecture solutions.

A stable platform or operating system according to the industry such as IBM will enable solution providers for insurers to roll out agile web and portal visualization applications.

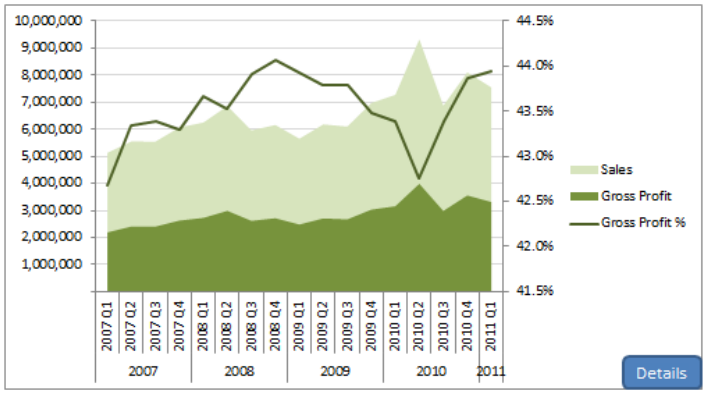
Insurers and their CRM's must create new, more convenient ways to support basic processes such as policy payments or submitting claims. Insurers can differentiate with IoT tuned in service metrics that better meet evolving customer technology demands, particularly in the mobile realm.

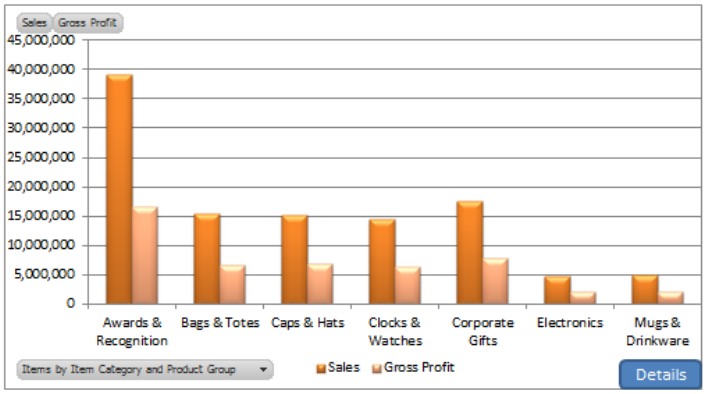
Customer use of iPhones, Social Media and other devices require Mobile transactional applications.

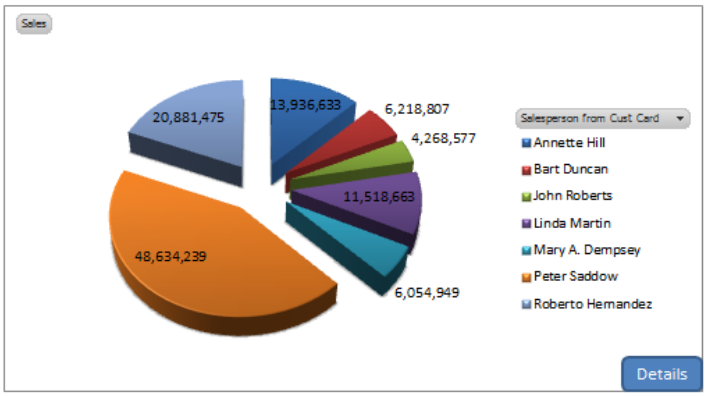
These data connection sources ultimately connect through mainframes, and these systems therefore play a key role in supporting cutting edge innovation.

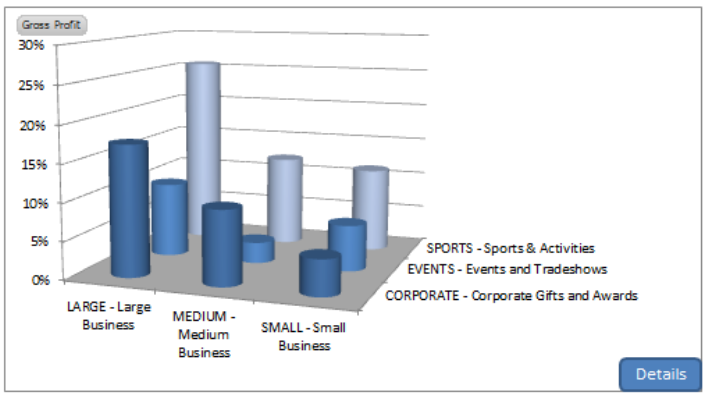
How insurers choose to measure results with customer facing visual tools will drive operation decision making and system investments.

Dashboards & Data as a Service









Performance management is now advancing with data as a service (DaaS)as a product that allows insurance carriers, brokers, and agencies to access the data they need all in one place, in real time and only pay for what they use.

Products take and aggregates risk-indicative data for insurance line of businesses: Commercial & Personal Property, and Auto into one centralized "cloud" repository.

The DaaS then exposes this information to customers through an application program interface (API) to make it available in real-time for underwriting, business development or other insurance applications.

Visual reporting is virtually shared across all departments for the timely use by insurer.

Internal and external views shared with the customers or stakeholders will create storyboards that reflect or support the customer interactions and service experience.

Data can be accessed from within sales and marketing tools, customer dashboards, underwriting and risk applications, mobile devices or virtually any other client site or vendor application.

APM & Visual Data Use Advantages

APM virtualization solutions provides a snapshot of activity within a current month, through multiple key performance indicators and filtering options.

Through a menu, users can select different dashboards that display employee activity, insurer summaries, new insureds or trends in specific lines of coverage, for example.

Users can drill down further to examine the types of policies within each producer's book of business or examine carrier relationships by APM breaks down year-over-year growth by policy types or ZIP code.

Geography dashboards map business and clients based on their location, where identifying trends provides value.

Data aggregated is in one place and made available with a scalable consumption model.

Refinement of data patterns and trends then translate into powerful visual data points that will lend insurers to showcase "good" scores to attract and retain customers.

APM & Graphical Visual Reporting

Visual interpretation and presentation of Business Intelligence, big data, analytic, is made possible with graphical reporting for insurance companies and brokerages in the data that they collect from insureds.

The large volume of data sources, streams and reports is combined into single aggregated on demand visual canvas.

The challenge resolution for software provider Applied Systems is managing, accessing and making sense of those numbers.

Collecting data is not a problem. The reason it is called big data is because over time, the amount of data you have explodes exponentially.

Non-visual type reports give a static, backward view of accounts.

Visual type reports enables analysis from multiple sources of raw data within the management systems.

As a result better business intelligence visualization allows you to discover, interact and ask additional questions—follow the data to make determinations.

Data Visualization – Revealing New Performance Metric Relationships

Data visual aids, such as charts, graphs and dashboards, are key tools in rolling out an effective enterprise risk and performance program.

Sophisticated risk management software, with the capability of producing interesting, complex graphics, is in high demand.

Graphics give increased depth and meaning to data reports, and can be used for showing relationships, process or business cycles, and expose prior unknown data casual/financial relationships.

There are many visualization methods to show relationships between variables.

Pie chart to complex, three-dimensional models, cluster maps that look more like artwork than a depiction of scientific data.

Business leaders need to be familiar with the many different ways to show relationships between data and choose the best for the message being conveyed.

Data Visualization – New Approaches

Report types include scatter plots, bubble charts and geographic scatters can help analyze and find correlations in factors or data that do not have a direct or linear correlation or where less obvious groupings may exists.

Bar graphs are excellent tools to compare /contrast groups of data against similar criteria, such as cost or time.

Experiment with Mind Maps. A mind map is a diagram used to show how words, concepts, activities, or other factors relate to a central common phrase or idea.

There are many different ways to construct a mind map, typically using a combination of graphics such as boxes, bubbles, or images, connected by lines and arrows.

The key to the effort is to capture all ideas relating to a topic in a creative, non-linear manner. It is more than a note-taking activity; it shows relationships visually that may otherwise be hard to describe.

The process of mind mapping encourages brainstorming, thinking about less-obvious connections, and helps an individual or group to structure and classify ideas in new ways.

Activity-Based Customer/OPS Metrics

Generally metrics can impair strategic differentiation. So for example why do claims departments continue measuring the same metrics?

Activity-based metrics must be developed to capture what adds value to the product. Activity that fulfills and exceeds the customer's expectations needs to be encouraged and measured, even if it detracts from other operational metrics.

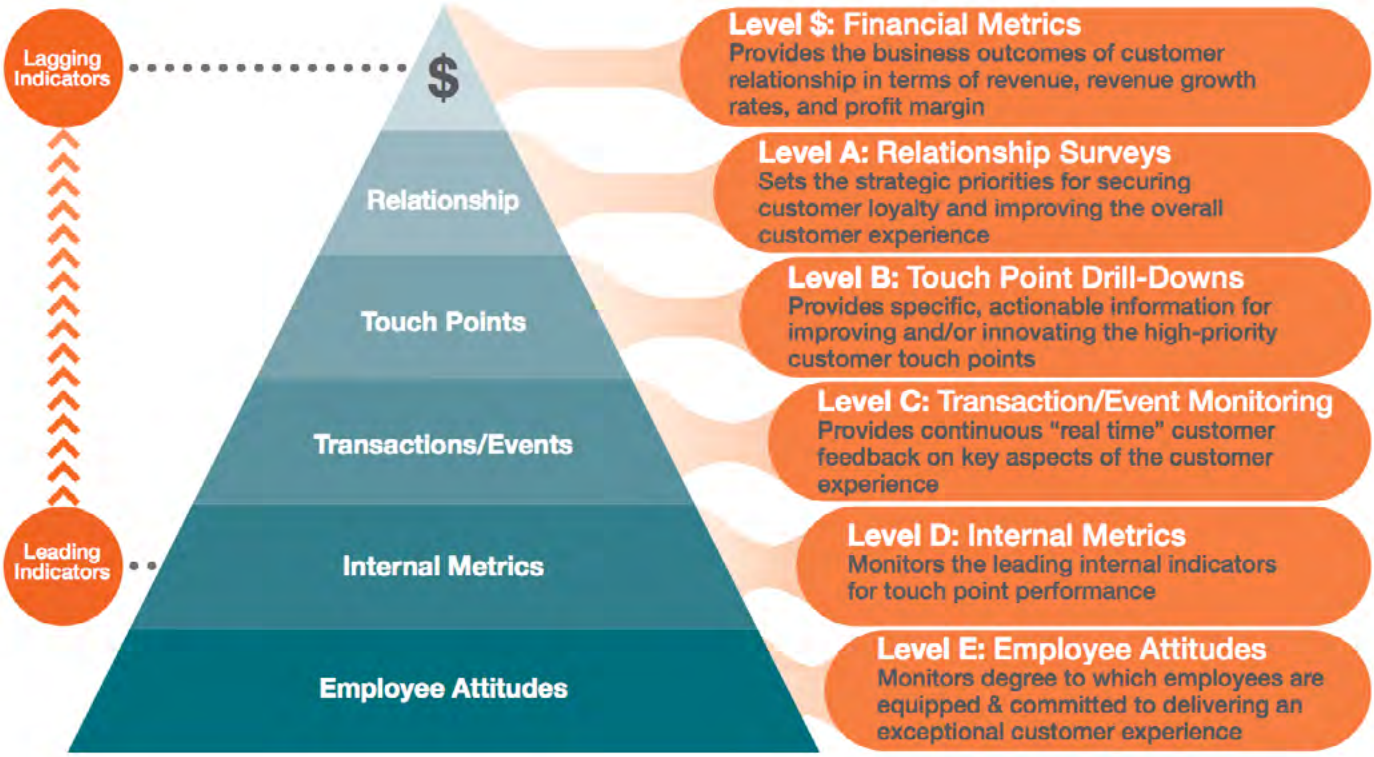
Management uses operation metrics such as closing ratios, changes in pending, new claims received, average paid by line of business, claims duration, lag times and others to judge their department's operational effectiveness.

But these measurements do not generally incentivize customers to buy a product but may secure provider networks

Visualization of non-traditional key performance measures will uncover new metrics that are forward facing to the customer and have a positive value proposition. For example customer adoption of portal for self help.

Activity metrics coupled with mind maps ideation development can launch new metrics that significantly impact servicing both internal and external customers.

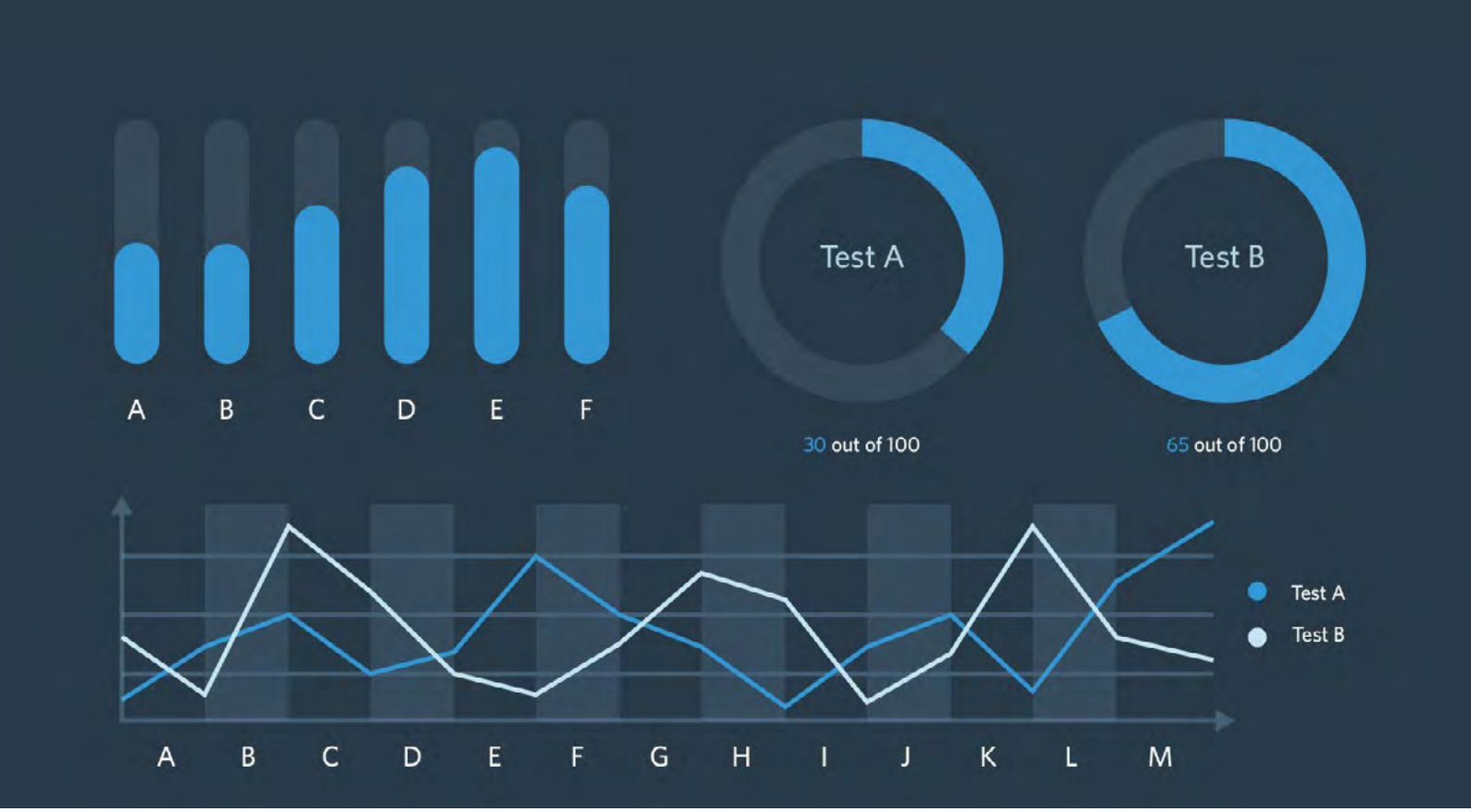
Consumerism & Metric Driven Service Levels



Customers require assistance with their policy servicing for targeted or limited episodes :

- **Address or Phone changes**
- **Basic changes in the policy**
- **Beneficiary or liability change**
- **FNOL**
- **Claims status queries**
- **Adding or deletion of dependents from policy**
- **Premium billing**
- **Renewal**

Activity Based Metrics with Visualization Drives Consumer Needs



Consumers expect real-time quality service. In order to meet those expectations, carriers must embrace virtual tools that enable high performance.

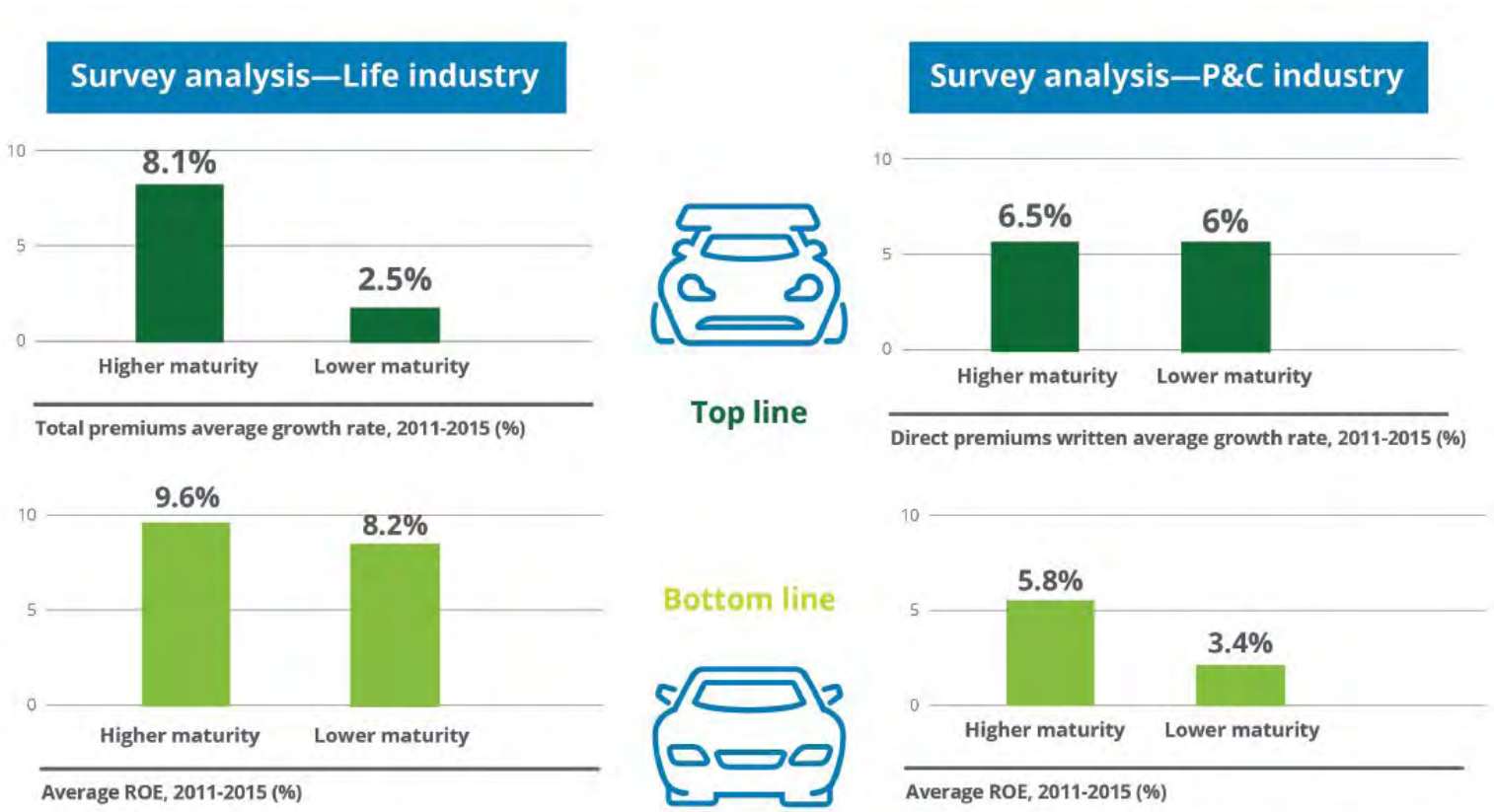
The insurance industry for example is entering into a new era of real-time crash reports by tapping into at-the-scene police reporting technology.

Claims organizations will be able to resolve claims faster at a lower cost. In the end, accessing crash reports in real-time will give carriers access to actionable information throughout the claims handling process, ultimately leading to better results and a more competitive position in the market.

This means that customers can get access to virtual information, one record at a time or one million records at a time.

Insurers will monitor results with new visual metrics that rely real time data reporting to assemble all the information into executable timely support of transactional claims processing for example.

Dashboarding – Setting Insurer Expectations



Dashboards should be user friendly, and easy to work with. The drag and drop feature in the screen design should include changing the layout on the fly.

Eliminate countless pages of reports and multiple data sources to get a clear picture of your organization.

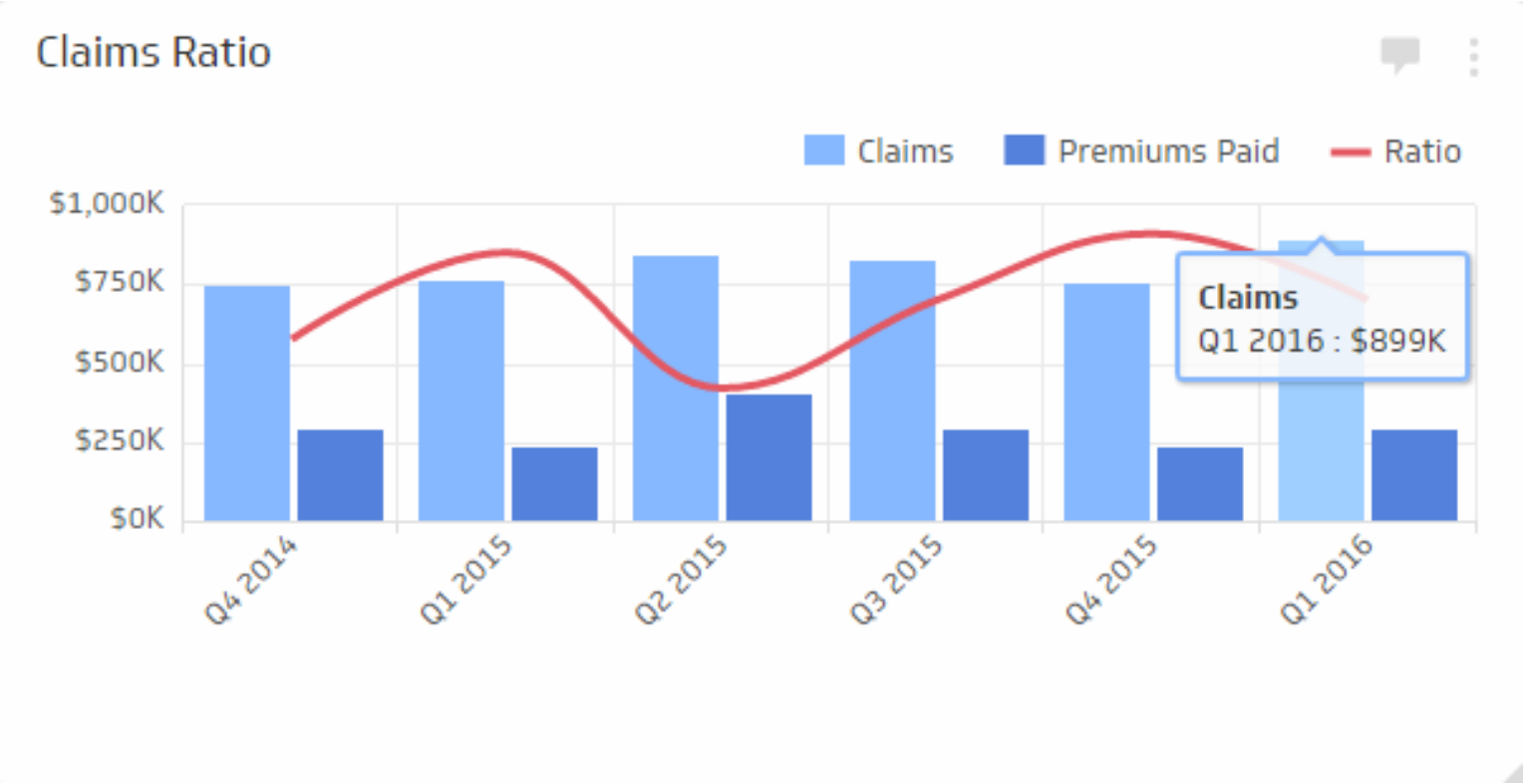
Have ability to combine all your data sources and modernize your reporting process. Using visual charts, maps, and drilldowns, you can build custom dashboards that meet your specific needs.

Dashboards should be application driven on the mainframe to make it cost effective and more malleable than traditional SAS business intelligence solutions.

Plus have intuitive dashboards up in just a few day's time – built by inline business analysts and with little or no programming required.

Unlike Tableau type visualization dashboards the ability to drill down or pivot data inquiry needs to be an especially important report capability.

Insurers Need to Visualize Key Metrics



Protecting revenue and customer base is through the use of advanced Dashboards and Scorecards.

Service providers will support and be essential to enable insurers to protect revenue, cash flow and productivity performance, and be able to measure these key performance indicators during all phases of core business operations: Pre – Present and Post Policy Delivery Phases.

Core business metrics to visualize include (number of new lives, policy orders and sales, monthly product revenue.

- **Return on surplus**
- **Loss ratio**
- **Premiums per exposure**
- **Losses per exposure**
- **Frequency per exposure**
- **Severity**
- **Components of claim costs**
- **Timing of closed claims**

Key Performance Measures for Dashboarding

Component costs and timing of claims settlement :
The analysis of component costs and the timing of the settlement of claims provides the controlling performance measurements to keep those average claim costs within their expected range.
These Key Performance Indicators provide the tools with which to monitor and bring about those improvements.

Severity :
Severity is a measure of the change in average cost per claim over time.

Frequency :
Frequency is a measure of the quality of business. To state the obvious, expect riskier business to have more accidents per unit of measure, and less risky business to have a lower accident count for the same unit of measure.

Profit per exposure :
Profit per exposure combines loss costs and premiums per exposure, looking at accident year and policy year profits.

Loss ratio :
Loss ratio is a universally acknowledged measure of profitability across all dimensions. Loss ratio is measured both on an incurred and reported basis and for accident and policy years.

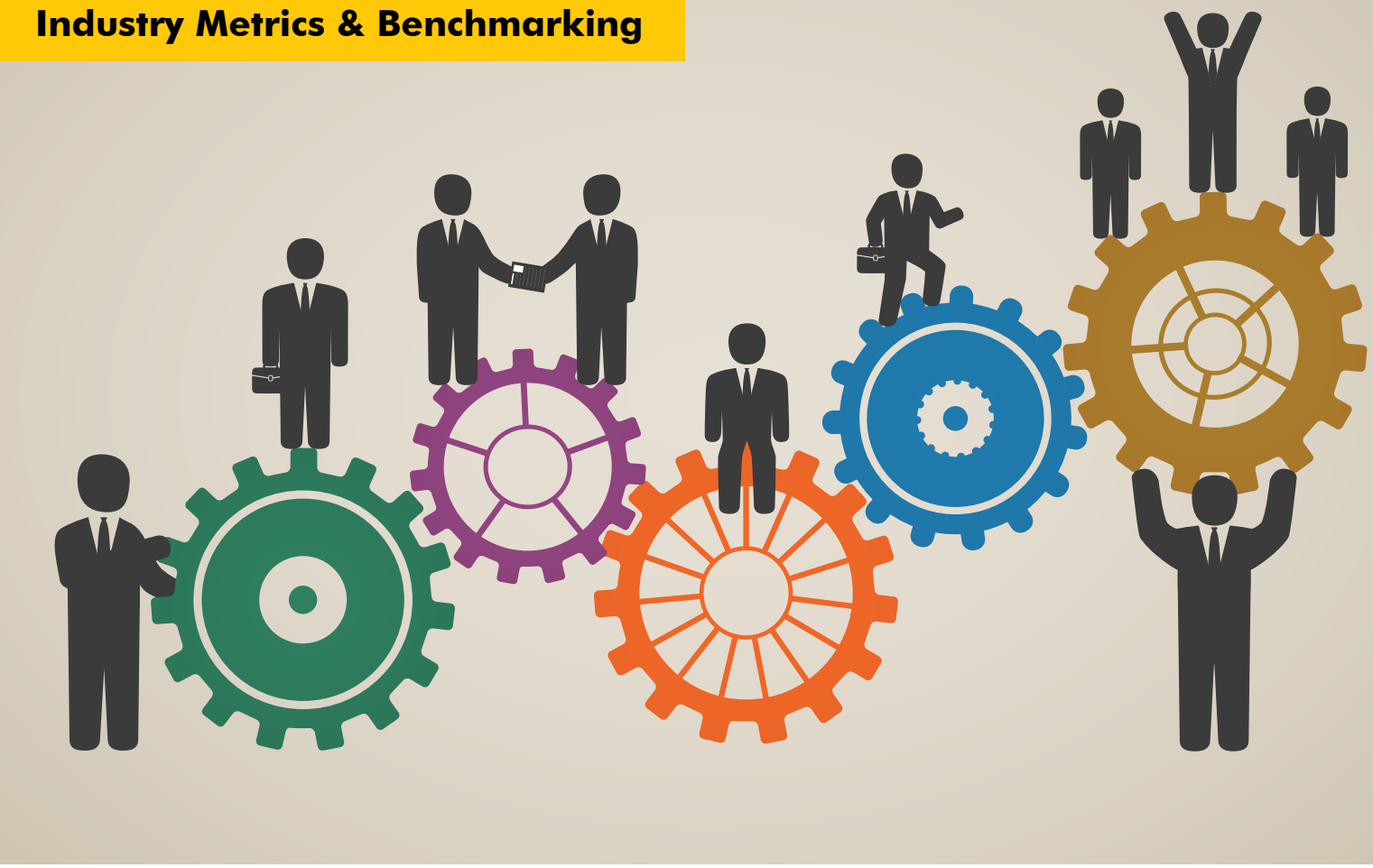
Retention :
Retention is a measure of renewal business performance. This can be viewed on a gross (i.e., all accounts that are remaining after renewal) or net basis.

Strike rates :
Strike rates reflect the effectiveness of new business production efforts. They can be examined across five key metrics:
percentage bound, percentage pending, percentage declined, percentage lost and percentage closed.

Premium budget :
Premium uses detail budgets and quickly evaluates the roll-up impact of variances.

Return on surplus :
The summary scorecard metric that reflects the total performance of all previous metrics is return on surplus. This metric monitors the performance of the company's investment in markets based on its strategic risk profile by state, class code and office.

Industry Metrics & Benchmarking



Listed below are typical Financial metrics of interest for companies that manage such an insurance company. Data Analytics, dashboards, and scorecards proffer: (Industry survey % findings)

http://www.claimsjournal.com/news/national/2015/12/10/267546.htm

Average total cost of case (loss + legal costs): 84%

Legal expense per case: 82%

Cycle time (days to resolution): 82%

Loss per litigated case: 77%

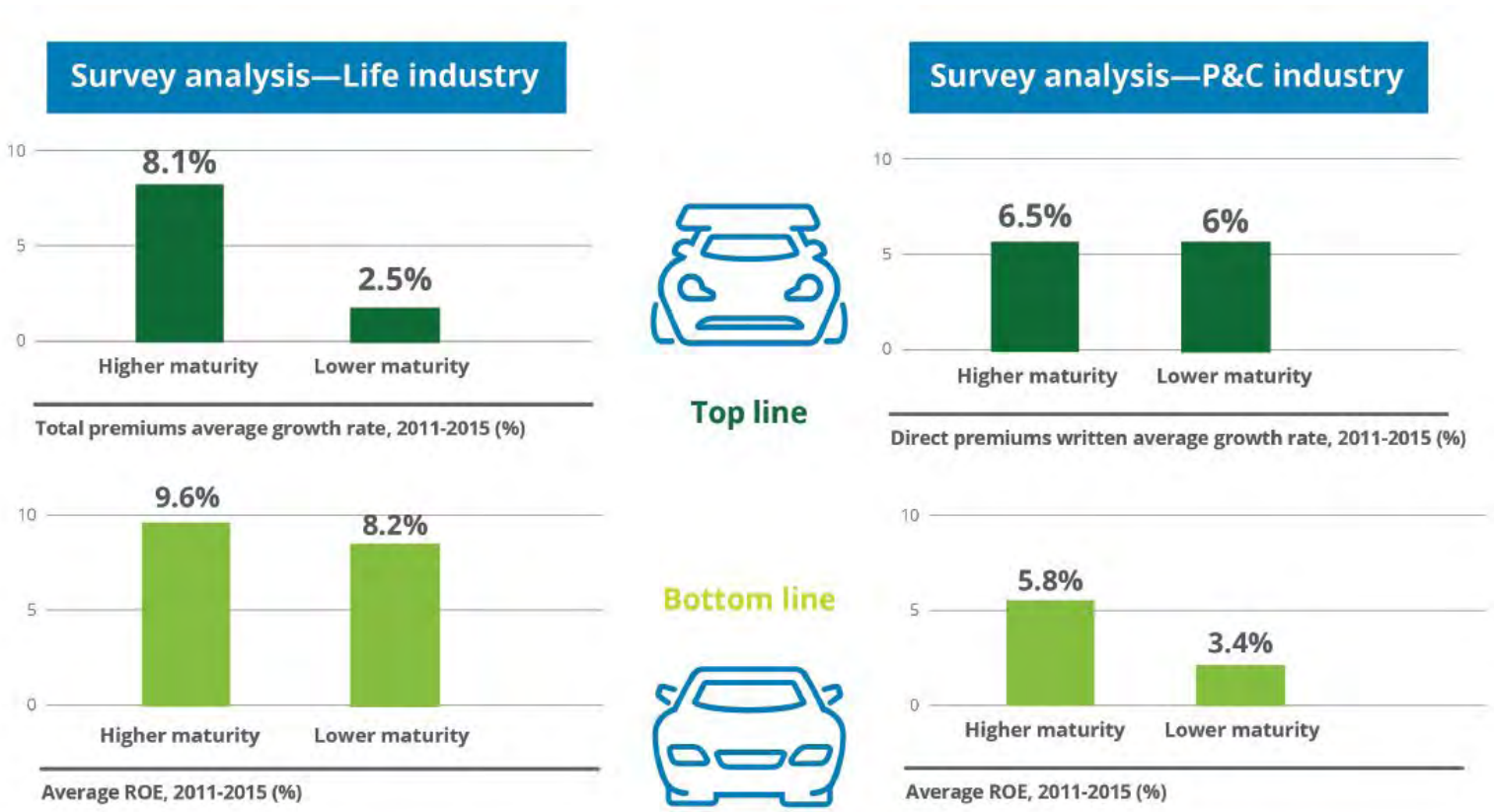
Allocated loss adjustment expense (ALAE) as % loss ratio: 71%

Allocated legal loss adjustment expense (ALLAE) as a % of loss ratio: 63%

Average or median bill rate by claim type: 62%

Staff vs. outside counsel outcomes: 51%

Dashboarding – Setting Insurer Expectations



Dashboards should be user friendly, and easy to work with. The drag and drop feature in the screen design should include changing the layout on the fly.

Eliminate countless pages of reports and multiple data sources to get a clear picture of your organization.

Have ability to combine all your data sources and modernize your reporting process. Using visual charts, maps, and drilldowns, you can build custom dashboards that meet your specific needs.

Dashboards should be application driven on the mainframe to make it cost effective and more malleable than traditional SAS business intelligence solutions.

Plus have intuitive dashboards up in just a few day's time – built by inline business analysts and with little or no programming required.

Unlike Tableau type visualization dashboards the ability to drill down or pivot data inquiry needs to be an especially important report capability.

Insurers Need to Visualize Key Metrics

Analyze global claims data

Not only data from claims process, but also externally available trends and regulatory insights are included as valuable inputs

Define KPIS to Track & Report

Discuss, strategize & develop KPIs to monitor and report online & at defined time intervals

Data Integration & Governance

Have built strong data Integration and governance back bones over a period of time, that give us efficiency in data integration.

Advanced Predictive Analytics

Trained team to take advantage of ongoing advances in data sciences, machine learning and deep learning that give superior insights into claims data & fraud analytics

Analytics Communication

Global Insights

Daily Weekly Monthly Reports

Smart Inputs For Strategy

Analytics Communication

Protecting revenue and customer base is through the use of advanced Dashboards and Scorecards.

Service providers will support and be essential to enable insurers to protect revenue, cash flow and productivity performance, and be able to measure these key performance indicators during all phases of core business operations: Pre – Present and Post Policy Delivery Phases.

Core business metrics to visualize include (number of new lives, policy orders and sales, monthly product revenue.

- **Return on surplus**
- **Loss ratio**
- **Premiums per exposure**
- **Losses per exposure**
- **Frequency per exposure**
- **Severity**
- **Components of claim costs**
- **Timing of closed claims**

Dashboard Provider Solutions

Claim Activity Measures

Insights on claims flow, assignment, current status, aging, handling efficiency , overall TAT,, Inputs to other departments etc.

Advanced Flag / Alert System

Using advanced analytics to forewarn and alert critical KPI moves before they reach red mark. High end predictive systems deployed to this effect.

Social Media Inputs

What customers and competitors are talking and trending in the all important social media. Very important Additional insights to internal claim flow .

Claim Scoring & Management

Build advanced scoring mechanisms to monitor, idaentify and mitigate outliers and fraudulent activities in claim process.

Critical Ratio Monitoring

Business leaders need these dashboards that show critical ratios that show current health of claims:
Loss Ratio, Reserve Ratio, Pay-Out Ratio, TAT, etc.

Regulatory Compliance & Reporting

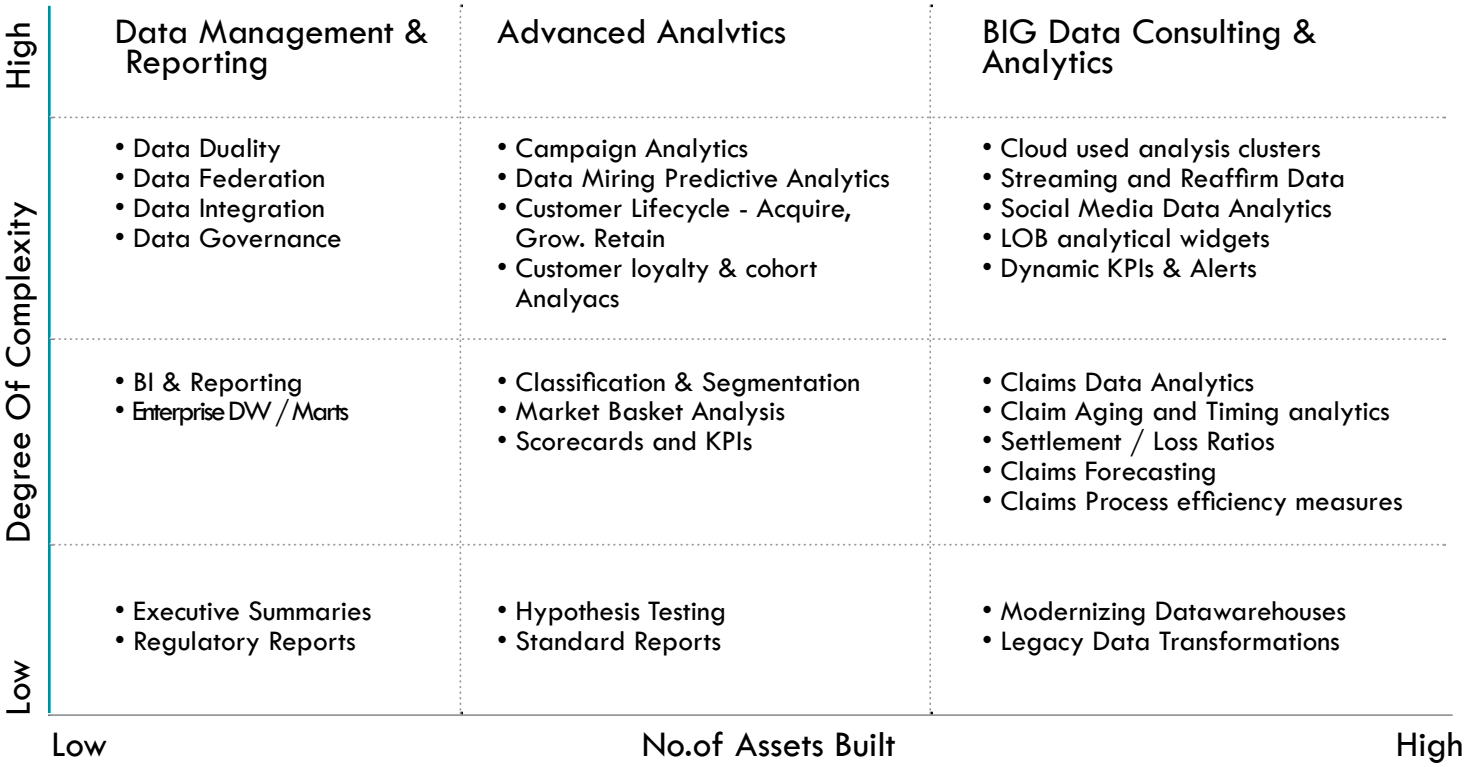
Industry wide standard reports and regulatory compliance reporting as needed by the specific area of insurance and claim processing.

Service Providers Support Multiple Data Channels & Virtual/Visual for Insurers

Process Modelling, Journey Mapping & Design Thinking

Delivery Efficiencies	Web-based Productivity Management System, Recruitment Assessment Tool, Contact Center Management Platform, Ticket/Case Management, Activity Intelligence.
Service Delivery Automation	Macro based automation, Desktop automation, Robotics Process Automation, Cognitive Intelligence, Process (BPM) automation, OCR & ICR
Digital Channel Enablement	Self Serve Channels – IVR++, Chatbot/Virtual Assistant, web self help, social/communities, Personalized Videos; Proactive Channels – SMS, Email; Assisted Channels – Voice, Email, Chat, Video, Social
Omni-Channel Experience	Channel Optimization Consulting, Customer Relationship Management, Knowledge Management, Content Development, Web Production Services
Advanced Analytics	Speech Analytics, Text Analytics, Cross-Sell / Up-Sell, Social Media Analytics; Operational Analytics, Business Intelligence Reporting, Advanced Data Modelling

Data Sciences for Insurance Industry

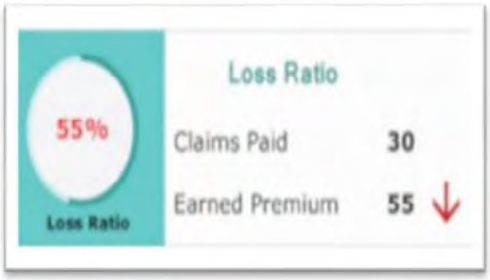


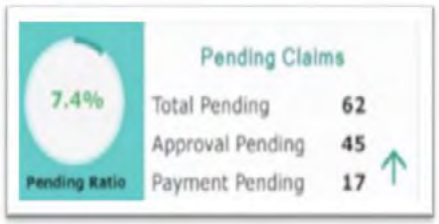
Visualization Tools And Technique

APM Dashboard Metrics

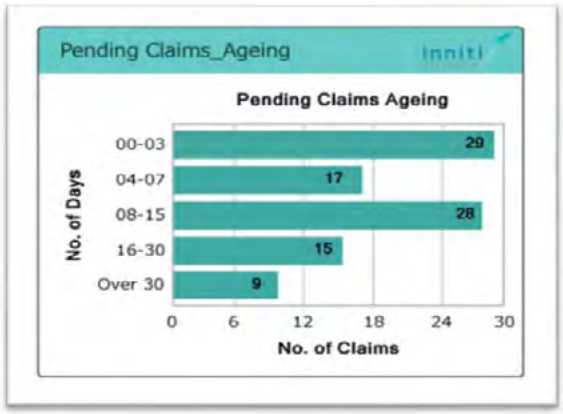
Few Examples : Analytics Dashboards and Widgets

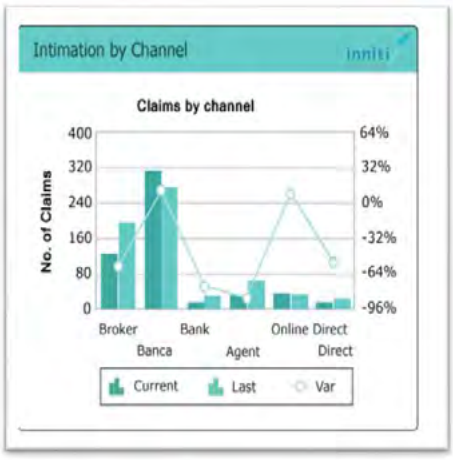
1 Analytical Ratios

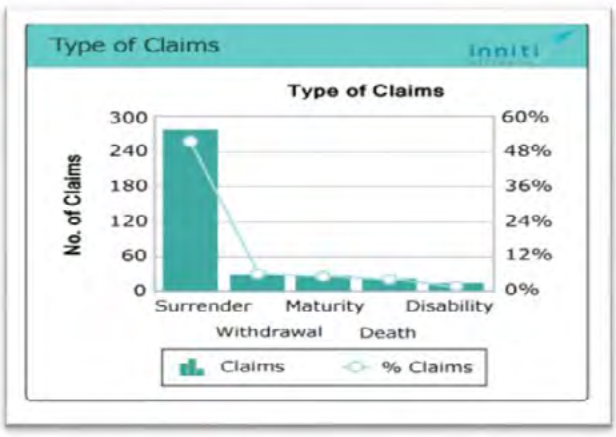




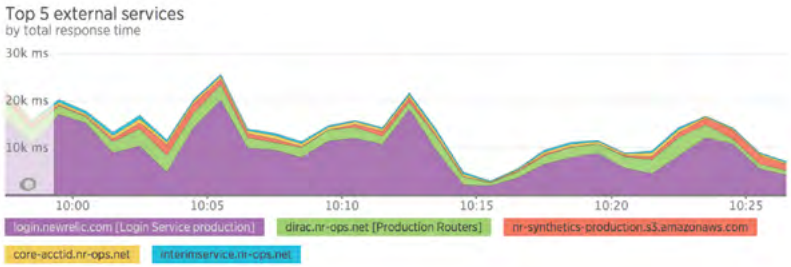
2 Interactive Claims Analytics

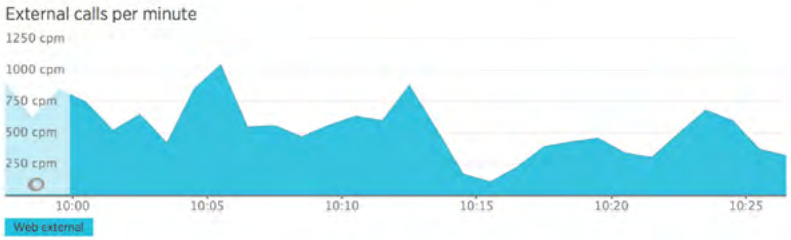


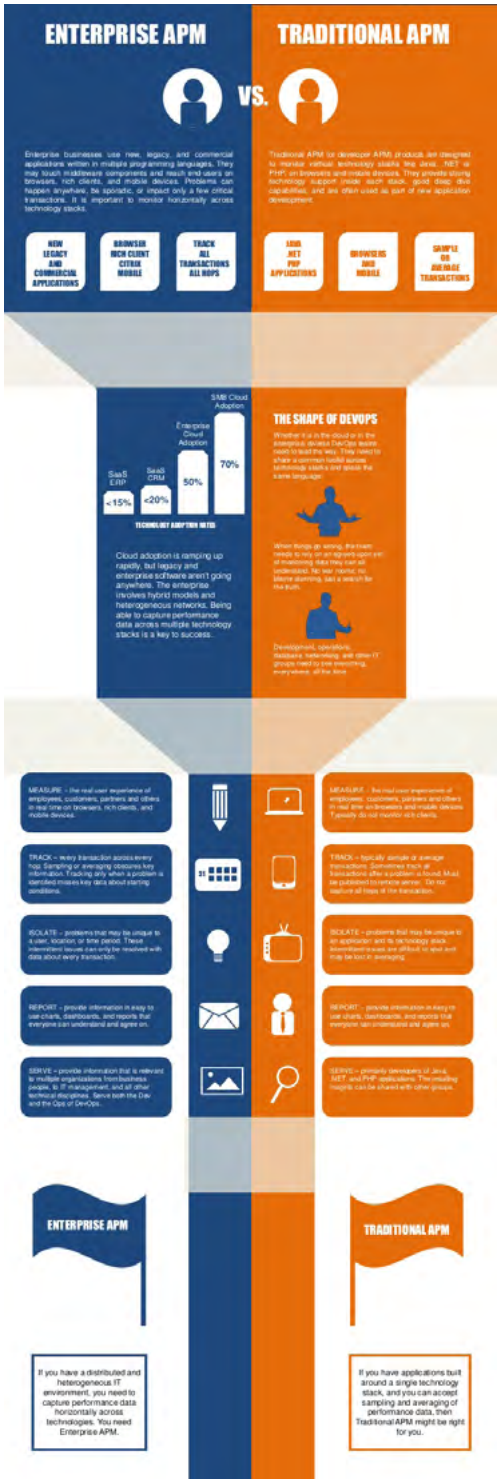




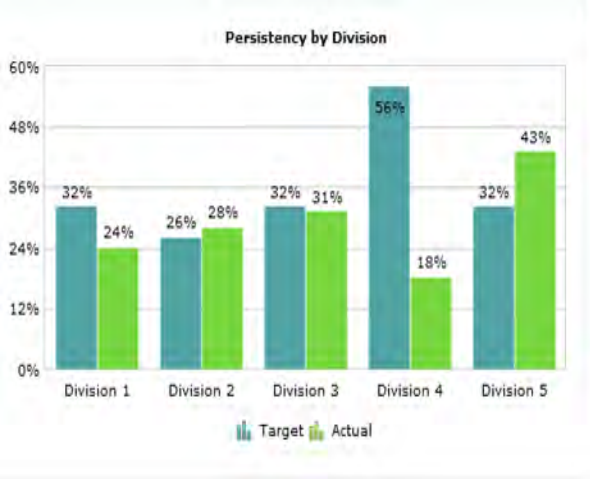
APM Dashboards and Infographics

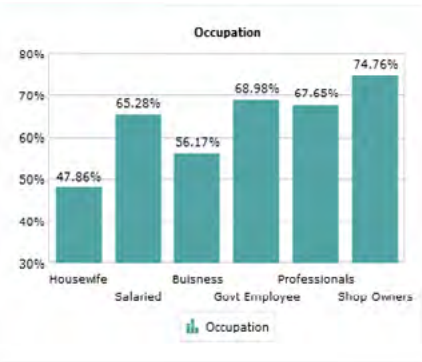


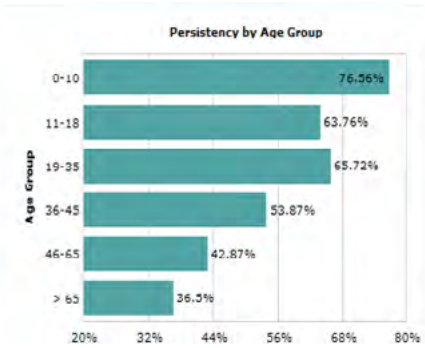


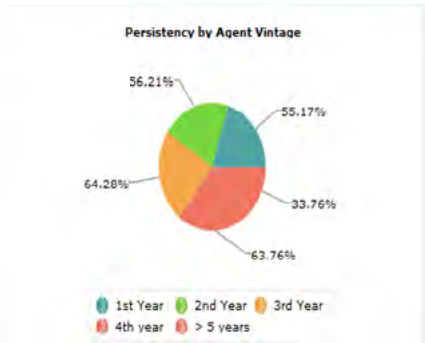


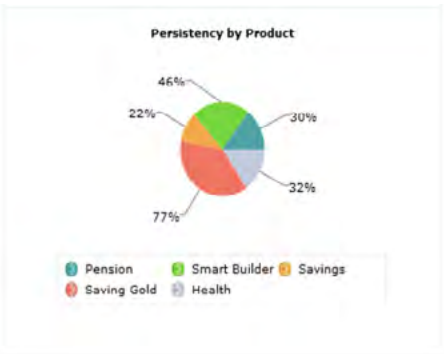
Sales - Persistence of Business - Widgets

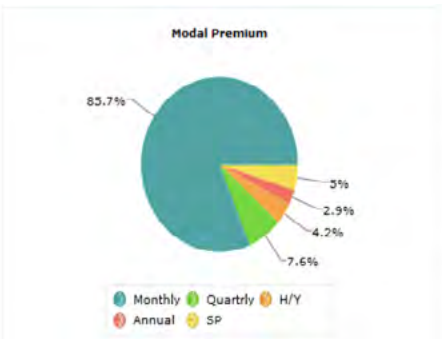


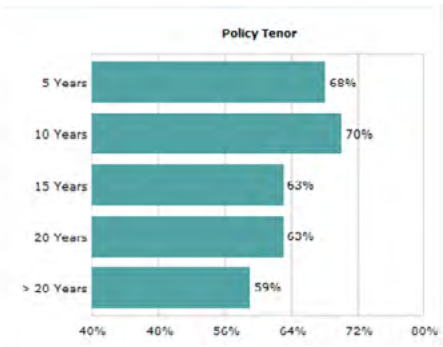












Analytics Dashboards and Widgets

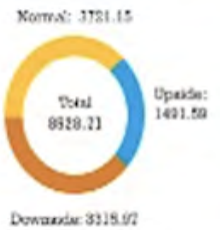
No	KPI (Mock 2017/2018)	Score				
		LIAM-MTA-NAMLIFA				
		Downside		Normal	Upside	
		50%	75%	100%	125%	150%
1	KPI 1 – Activity: Number of cases per quarter / Annualised Premium	-	-	3 per qtr 12 pa	6 per qtr 24 pa	9 per qtr 36 pa
		-	37,500	50,000	70,000	90,000
2	KPI 2 – Quality: Completion rate of CFF option 1 & 2	10%	15%	20%	25%	30%
3	KPI 3a – Quality: Persistency ratio – 1st year persistency			85%	90%	93%
4	KPI 3b – Quality: Persistency ratio – 2nd year persistency		75%	80%	85%	90%
5	KPI 4 – Quality: Substantiated number of complaints*			0		
6	KPI 5 – Competency: 30 CPD hours with 5 hours of relevant programmes**			Met		

Impact \ Probability	1 Extremely unlikely	2 Likely	3 Extremely likely
1 Not critical	1	2	3
1 Significant	2	4	6
1 Fundamental to continuing operations	3	6	9

Impact x Probability = **Risk score**

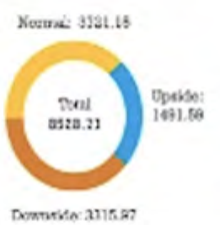
Priority
Low
Medium
High

KPI 1: Activity (Annualised Premium)



	Upside	Normal	Downside
Agency	578.62	376.76	536.21
Bance	505.21	2637.32	578.62
Broker	73.41	2637.32	605.24

KPI 2: Quality (Completion rate of CFF option 2)



	Upside	Normal	Downside
Agency	578.62	376.76	536.21
Bance	505.21	2637.32	578.62
Broker	73.41	2637.32	605.24

Dashboard – Sales Metrics Tracker

Division: National | Region: All | Branch: All

ANP/NOP

82% % Issued

Submission	125,876	(325)
Issued	103,652	(283)
Pending	22,224	(42)

68% 13th Month Persistency

REVENUE LOSS

Revenue Loss	22,87,954
Projected Revenue Loss	4,187,900

SALES FORECAST

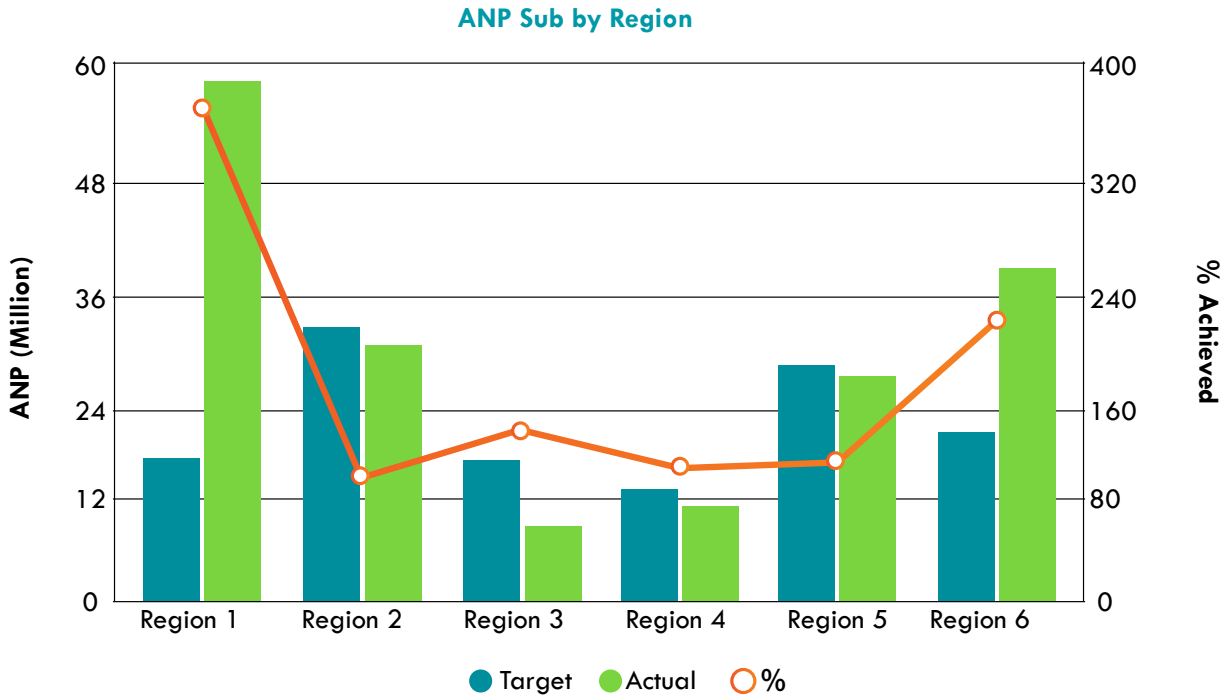
1,250,000

-11.80 % Growth

Sales Scorecard

Key Metrics	Target	Actual	Achieved		LY Actual	Variance	Trends
ANP Submission	154.79	148.32	95.20%	●	129.82	27.09%	↑
ANP Issued	134.79	128.32	95.20%	●	119.82	7.09%	↑
FYP Collected	105.98	108.1	102.00%	●	103.76	4.18%	↑
NBP Issued	165.72	112.87	68.11%	●	154.87	27.12%	↓
VONB (Million)	31.76	36.76	116%	●	32.87	11.83%	↑
VONB (%)	31.76	36.76	116%	●	32.87	11.83%	↑
NOP Submission	1682	1782	120%	●	1952	12.73%	↑
NOP Issued(000)	1652	1762	107%	●	1952	9.73%	↑

ANP Sub by Region



Conclusion

The insurance industry will continue to pursue applied performance management approach to maintain and grow their businesses in the IoT economy with strategic reliance on virtual/visual data management. Service provider companies will deliver virtual data solutions that enable insurers to communicate and complete business transactions with internal/external stakeholders and consumers across all technology channels.

The advent of DaaS as a method to improve data management and visual data analysis will enable insurers to be more effective and efficient managing if not seeing how well or not their financial and customer service operations.

The full integration of applied performance management, data capture across multiple customer technology sources will lead to greater visual clarity on key industry data drivers. It will create seamless communication and web based policy administration, customer engagement and insurance business portals with comprehensive visually enhancing understandings for everyone

In the use of advancing data technologies and visual solutions not only retrospective but prospective insights if not capability can be derived. All decision makers and consumers will have better choices in real time to mitigate risk, control costs and obtain desirable insurance services in real time.