This session will explore modernization opportunities throughout your pooling business processes and member interactions.

How can “modernization” build a stronger member connection, improve underwriting operations and add value to your pool?

Modernize Your Underwriting Function
The future of the insurance industry

A capabilities perspective

https://www.youtube.com/watch?v=-g-jV94s9Uo&t=4s

Modernization
Insurance industry needs more pioneering spirit
Modernization – understanding the value chain

- All the components have a link to risk management and therefore to risk profile changes, impact on both external requirements and internal capital availability
- Need to be supported by appropriate Corporate Governance, Finance & Reporting, IT Environment, etc.
Coherence of these capabilities, across the value chain, is critical

Addressing these critical capabilities can produce a number of organizational benefits, providing the ability to establish an underwriting portfolio with the desired mix of business that performs at, or close to, targeted underwriting profitability goals and objectives.
Optimization of the pool’s target operating model to achieve future growth
Modernizing for a competitive advantage

Optimizing value through enhanced decision making

Leading insurers separate themselves by their ability to access timely, relevant, and reliable management information to measure results and drive management action.

*Legacy processes, approach and thinking do not allow for this*

Same principles apply to pools
Establishing a feedback loop across functions facilitates information sharing and strategic execution

Pools should successfully leverage information and cross-functional expertise to develop operational efficiencies and effectiveness; allows for timely decision-making, better risk management selection and reductions to expenses. **Having the right data at the right time with the right governance is key.**

- **Claims leadership to anticipate changes in claims experience and identify emerging claims trends**
- **Underwriters to monitor early warnings to make faster assessments of profitability and take decisive actions in production and technical pricing**
- **Greater use of Risk Analytics to identify drivers of underlying business trends to improve future decision making and capital usage**
- **The Reserving team to improve accuracy of projections by leveraging Claims and Underwriting insights and translate historical results into actionable metrics**

Modernization
Effective and efficient use of information is a necessity

- Optimizing the use of advanced analytics for product development, pricing and claims management
- Leveraging claims information in a more timely manner
- Refining underwriting appetites for more targeted risk selection
- Preparing managerial and financial reports more efficiently
- Implementing new compliance imperatives more quickly
- Increasing focus on distribution management and its linkage to strategy
Embedded decision making relies on three critical areas

**Reporting and Dashboards**
Develop cross-functional dashboards to monitor business performance and institute regular management information reporting protocols that highlight decision-critical information across functions.

**Data Structure & Taxonomy**
Define data structures and taxonomy with cross-functional consistency to ensure high quality data is captured and accessible for analysis and decision-making across functions.

**Operating Model and Governance**
Establish management and governance structures that ensure regular review, discussion and action based on cross-functional analysis and insights.

Modernization
Common dashboards help drive profitable growth agendas

Common dashboards facilitate a shared view of business performance to monitor results, research underlying trends, investigate anomalies, and enable cross-functional action plans to drive profitable growth.
**Lack of data consistency prohibits cross functional communication**

<table>
<thead>
<tr>
<th>Underwriting/ Pricing</th>
<th>Reserving</th>
<th>Financial Reporting</th>
<th>Claims Management</th>
<th>Predictive Analytics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Focus on class and/or account level may be disconnected from other bases of assessment</td>
<td>• Reserve segment view may be disconnected from other bases of assessment</td>
<td>• Significant time and effort required to provide usable data to other functional areas</td>
<td>• Claims data requirements disconnected from underwriting and pricing requirements</td>
<td>• Uncertain data sources due to lack of common data taxonomy</td>
</tr>
<tr>
<td>• Assessment of historical results may not be aligned with financial reporting</td>
<td>• Lack of granularity complicates underwriting/pricing insights</td>
<td>• Financial reporting focus disconnected from other bases of assessment</td>
<td>• Imperfect information flow regarding changes in business written and/or claims processes</td>
<td>• Scrubbing &amp; manipulating data consumes time</td>
</tr>
<tr>
<td>• Ad-hoc claims insights are difficult to relate to underwriting action</td>
<td>• Changes in underwriting strategy are difficult to pass to reserving processes</td>
<td>• Inconsistent MI complicates understanding of business drivers</td>
<td>• Inconsistent/ unavailable data across functions hinders embedding analytics into strategic planning and capital allocations</td>
<td>• Inconsistent/ unavailable data across functions</td>
</tr>
</tbody>
</table>

*Modernization*
A common data taxonomy facilitates cross-functional communication

- Timely identification of changes to frequency and/or severity via linked code structures so that underwriting actions can be taken prior to earnings or capital erosion
- Analytics output applied to risk selection, pricing, distribution, ceded re, medical, and litigation management
- Enhanced ability to use internal data for predictive analytics applications to segmentation, demand, and technical rate modeling
- Improved accuracy of loss reserve estimates as claims, underwriting, and pricing data is embedded in reserve analyses
- Linked code structures allow actuarial and underwriting data to provide early warnings to claims management

Common data taxonomy provides the foundational language of cross-functional communication; reporting and dashboards provide the means of expressing the language

Modernization
A data persistence layer with a data lake platform and extraction tools facilitates the information advantage.
Underwriting
For several reasons, underwriting cycles will become less pronounced

- Data & Analytics Advancements
- No More Investment Return Cushion
- Lines of Business Out of Sync
- Excess Surplus in the Industry

What does this mean for pools?

- Pools cannot rely on underwriting cycles to help them or justify their existence
- Pools need to be able to compete

Underwriting
Some insurers have established an underwriting advantage and consistently outperform year-in and year-out

What is an Underwriting Advantage?

<table>
<thead>
<tr>
<th>Component</th>
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</thead>
<tbody>
<tr>
<td>Cross-sectional portfolio management (Portfolio)</td>
<td></td>
</tr>
<tr>
<td>Industry and/or line of business expertise (Expertise)</td>
<td></td>
</tr>
<tr>
<td>Clear risk appetite and disciplined underwriting execution (Execution)</td>
<td></td>
</tr>
<tr>
<td>Cross-functional feedback loops and risk governance (Information)</td>
<td></td>
</tr>
</tbody>
</table>
Establishing a feedback loop across functions facilitates information sharing and strategic execution

Collaboration to inform Underwriting Advantage

Underwriting & Finance/Actuarial

Finance/Actuarial & Claims/Risk Control

Claims/Risk Control & Underwriting

Underwriting
Achievement of profitable growth requires functional integration

Leading indicators of underwriting profit/loss

Strong underwriting, claims management, analytically-driven insights and operational efficiency are all being called upon to deliver results; success requires thoughtful integration of the functions responsible for these activities. Proactive, data-driven organizations will leverage an information advantage to continuously reassess market positioning and risk selection.
Commercial underwriting leading practices into a practical assessment tool (or capability maturity model)

Key dimensions
1. Strategy and Operating model
2. Underwriting Processes
3. Pricing
4. Regulatory and Governance
5. Distribution
6. Ceded Reinsurance
7. Systems and Technology

Common indications of underwriting gaps
- Outsized losses, loss experience
- Underperforming units/lines of business
- Various unofficial/offline UW tools/templates
- Suboptimal authority, peer review and referral processes
Key enhancements as risk managers consider the future state of ERM
## Six habits of dynamic risk functions

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Go all in on the organization’s digital plan</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Upskill and inject new talent to move at the speed of the organization</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Find the right fit for emerging technologies</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Enable the organization to act on risks in real time</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Actively engage decision-makers of key digital initiatives</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Collaborate to provide a consolidated view of risks</td>
<td></td>
</tr>
</tbody>
</table>
PwC Modernization Survey
Key Takeaways

01 Multiple catalysts are driving companies to modernize. Successful execution depends on having comprehensive plans.

02 Significant opportunity exists to expand automation, increasing “productive time” and reducing process specialization.

03 Getting timely and accurate data is the top priority, and most companies have that today. The current state is effective, but suboptimal.

04 The changing paradigm will impact people, increasing the need for structured training and development programs, including new tools and techniques.

05 With necessary investments in data, technology, automation, training and development, and by articulating a comprehensive modernization strategy, actuarial teams can provide greater insights and value to their business partners.
Snapshot on modernization drivers and plans
• Multiple drivers are accelerating the pace of modernization for the actuarial function: **95% of firms have 2 or more drivers of change**
• Not surprisingly regulatory change is a key catalyst for modernization given IFRS 17 and US GAAP targeted improvements

**Drivers for modernization**

<table>
<thead>
<tr>
<th>Modernization driver:</th>
<th>Life</th>
<th>P&amp;C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting efficiency</td>
<td>26%</td>
<td>26%</td>
</tr>
<tr>
<td>Regulatory changes</td>
<td>23%</td>
<td>19%</td>
</tr>
<tr>
<td>Data management</td>
<td>21%</td>
<td>16%</td>
</tr>
<tr>
<td>Insight</td>
<td>18%</td>
<td>9%</td>
</tr>
<tr>
<td>Organizational structure</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Main focus areas are implementation of foundational capabilities, e.g. data infrastructure, governance/controls and actuarial modeling platforms.

For future focus AI/Machine learning, Advanced analytics and Management reporting are the three top categories.
The elusive goal of full automation

Manual process steps still very common
Complete process automation is very rare

- Surprisingly, the level of automation does not vary that much by the nature of activity - Data manipulation is slightly more automated
- Not surprisingly actuaries still rely on VBA type automation
- P&C companies in general have a lower degree of automation

Reliance on manual processes

<table>
<thead>
<tr>
<th>Process</th>
<th>Analysis</th>
<th>Data Manipulation</th>
<th>Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Excel process</td>
<td>20%</td>
<td>13%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Some VBA type automation</td>
<td>47%</td>
<td>38%</td>
<td>38%</td>
</tr>
<tr>
<td>Limited manual intervention</td>
<td>13%</td>
<td>22%</td>
<td>20%</td>
</tr>
<tr>
<td>Major processes automated</td>
<td>15%</td>
<td>18%</td>
<td>13%</td>
</tr>
<tr>
<td>Process fully automated</td>
<td>4%</td>
<td>9%</td>
<td>2%</td>
</tr>
</tbody>
</table>
The challenge of data management

Timely, accurate and granular data remains the objective, adding commonization.
**Data management**

Achievements and priorities

- Data accuracy, timeliness, governance and controls continue to be high priorities, with prior efforts showing improvements
- Data consistency is high priority that has not yet been achieved
- Self-service seems to be of lower importance, particularly for Life companies

**Data and technology support for actuarial function**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Which do you have today</th>
<th>High Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate and timely availability of data</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>Well defined governance and controls</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Accessible data/Automated ETL</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Standardized and granular data</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Simple-to-use query and analysis tools</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Effective data quality and standards enforced</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>Key processes supported by automated workflow</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Single source of truth</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Effective data visualization and analysis tools</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Self service and automated reporting</td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>

Responding companies

- 80%
- 60%
- 40%
- 20%
- 0%
So what’s next?
New frontiers
Emergent technologies

- Current technology investments are focused on speed, power, and insight
- Business Intelligence and cloud computing will be a common part of the actuarial toolkit within 3 years
- Expect advanced analytics & AI adoption within 5 years
- P&C and Reinsurers are eyeing blockchain

Adoption of emerging technologies

<table>
<thead>
<tr>
<th>Technology</th>
<th>Current Use</th>
<th>in 1-2 yrs</th>
<th>in 3-5 yrs</th>
<th>No plans for adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI tools</td>
<td>44%</td>
<td>24%</td>
<td>10%</td>
<td>4%</td>
</tr>
<tr>
<td>Cloud computing</td>
<td>36%</td>
<td>42%</td>
<td>11%</td>
<td>2%</td>
</tr>
<tr>
<td>Big data and Hadoop</td>
<td>20%</td>
<td>22%</td>
<td>11%</td>
<td>2%</td>
</tr>
<tr>
<td>Robotic process automation</td>
<td>18%</td>
<td>31%</td>
<td>22%</td>
<td>2%</td>
</tr>
<tr>
<td>In-memory computing</td>
<td>13%</td>
<td>7%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>AI/machine learning</td>
<td>4%</td>
<td>20%</td>
<td>20%</td>
<td>16%</td>
</tr>
<tr>
<td>Blockchain</td>
<td>4%</td>
<td>11%</td>
<td>13%</td>
<td>72%</td>
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</tbody>
</table>
Aggregation and reporting

- Basic tools remain most common for visualization and reporting purposes
- A smaller number of companies rely on user defined reporting tools
- About 20% of insurers have some automated and self-service reporting tools
- Going forward, PwC sees insurer interest in robust reporting processes and BI tools

Current use of visualization and reporting software

<table>
<thead>
<tr>
<th>% of Total responses</th>
<th>Basic tools</th>
<th>Largely automated</th>
<th>Some reporting tools</th>
<th>Automated custom reporting tool</th>
<th>Automated custom reporting tool with what-if-analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>11%</td>
<td>15%</td>
<td>20%</td>
<td>5%</td>
<td>2%</td>
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<tr>
<td>5%</td>
<td>50%</td>
<td>30%</td>
<td>7%</td>
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<td>10%</td>
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<td>15%</td>
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<td>20%</td>
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<td>25%</td>
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<td>30%</td>
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<td>35%</td>
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<td>40%</td>
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<td>45%</td>
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<tr>
<td>50%</td>
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</table>
Advanced analytics

- Deeper insights and emerging trends are the two top drivers of advanced analytics
- P&C insurers cited ‘identifying new sources of value’ as their top driver
- Coupling advanced analytics with BI results in better clarity, faster results and greater responsiveness to management requests

Expected Value from Advanced Analytics

- Deeper insights: 73%
- Spot emerging trends: 71%
- Identifying new sources of value: 60%
- Improved insight communication: 53%
- Increased efficiency: 49%
- Increased responsiveness: 49%
- Solve new problems: 49%
- Improved accuracy: 49%
Impediments to adopting advanced analytics

- **Project Prioritization** is the most common impediment in adopting advanced analytics.
- Insurers are smart to focus on data cleanup first.
- Lack of methodology knowledge and programming skills are other key challenges.

**Greatest Impediments to Advanced Analytics Adoption**

- Prioritization: 88%
- Lack of methodology knowledge: 51%
- Unclear value proposition: 47%
- Lack of programming skills: 42%
- Data volume is insufficient: 23%
- Implementation challenges: 16%
- Lack of internal support: 14%
- Regulatory issues: 2%

Responding companies
Thank You

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