Deloitte.
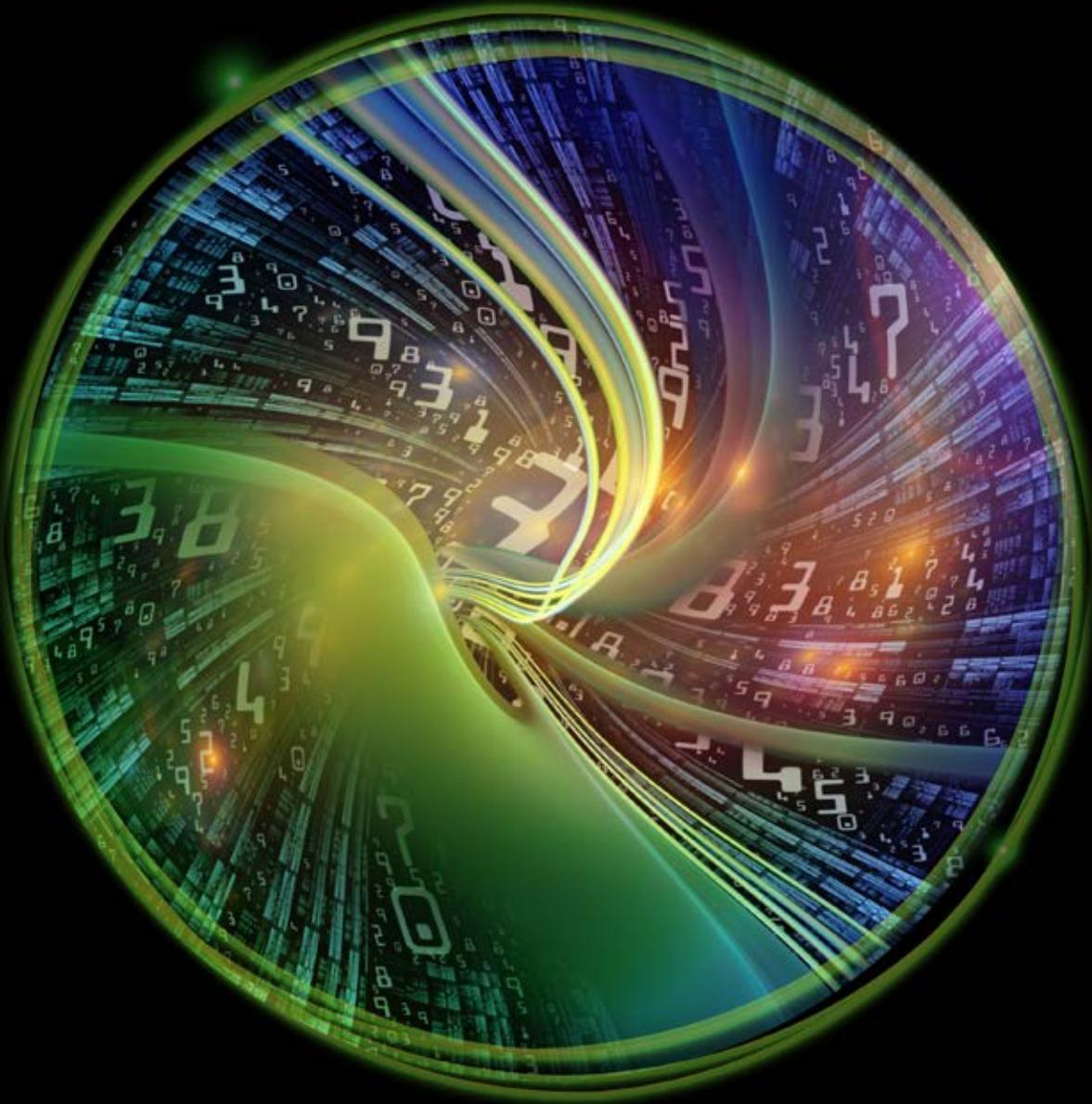
Modernizing the actuarial operating model
Preparing insurance companies for the future of work

Contents

Executive summary

Today's insurance company chief actuary wears many hats. No longer considered solely a calculation guru, the chief actuary also is being asked to serve as a risk manager, business advisor, and industry leader. Add to this the responsibility to manage regulatory, rating agency, and market pressures, and the chief actuary has a full agenda.

As the chief actuary's role evolves and expands, so does that of the actuarial function as a whole. A strategically minded chief actuary recognizes the need to modernize his or her organization to meet stakeholders' changing expectations while still controlling expenses. This important transformation should not be undertaken in isolation, though; it requires a holistic, enterprise-wide view that considers what the actuarial function does, how it delivers, where the work is completed, and how it is governed—a next-generation actuarial operating model.

This paper examines the drivers, components, benefits, and challenges of modernizing the actuarial operating model and suggests taking specific actions to help prepare insurance companies for the future of work.

Changing industry, changing function

The insurance industry landscape is changing at an increasingly rapid pace. A number of market and technology/data trends are generating new opportunities and challenges for insurance companies across all industry segments—life and annuities (L&A), property and casualty (P&C), and health care.

Market trends—These include:

- Low-interest-rate environment

- Political and regulatory uncertainty

- Increasing industry merger and acquisition (M&A) activity

- Customer demographic shifts

- Growing demand for new products

- Expectations for a digitized and personalized customer experience

- Changing and aging industry workforce

- Competition from tech-savvy, nimble insurance technology (InsurTech) startups.

Technology, data, and analytics trends—Insurance companies have a growing need to capture information and extract value from new sources of data, apply advanced analytics to the entire product life cycle, manage data security and privacy, and comply with regulatory requirements.

These trends are producing implications not only for insurance companies in total, but in some ways specifically for the actuarial function. Among these implications are:

- **Regulatory, tax, and reporting changes.** The evolving regulatory environment is adding responsibilities to actuaries' already lengthy list of daily activities. As a result, many actuaries are focusing more on completing tasks than on mining value-added insights that should result from this work.

- **Renewed focus on risk management.** Companies continue to double down on risk management in the wake of the 2008 financial crisis. Concurrently, changes in demographics and customer behavior are prompting companies to develop products with risk profiles that differ from those historically sold in an effort to appeal to increasingly diverse (especially younger) customer groups.

- **Reduction of financial restatements, delayed filings, and material weaknesses.** Following the effective implementation of Section 404 of the Sarbanes-Oxley Act (SOX),[1] the occurrence of financial restatements, delayed filings, and material weaknesses has substantially decreased and the need to control them has lessened. However, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) is placing renewed corporate focus on these items to avoid potential fraud. As a result, the number of controls around the financial reporting process, of which actuaries are involved, has increased.

- **Management and cultural changes.** Actuarial managers are expecting their teams to identify smarter and more efficient ways to work while also focusing on being flexible in how that work is completed.

---

1. SOX Section 404 says that publicly traded companies must establish, document, and maintain internal controls and procedures for financial reporting. It also requires companies to check the effectiveness of internal controls and procedures for financial reporting. Source: www.proedit.com/sarbanes-oxley-section-404-documentation/sarbanes-oxley-section-404-2/

- **Major shift in business strategy or organization.** Companies are realizing that organic growth is becoming increasingly difficult to maintain; instead, many are acquiring or building similar and complementary businesses to expand their products and capabilities. This shift in strategy, as well as the above-mentioned product changes, is requiring actuaries to identify ways to spend more time on analysis and less on mundane tasks.

- **Actuarial/finance cost reduction initiatives.** For years, companies have cut operating costs without touching the actuarial function. Today, executive management is charging in-house actuaries to reevaluate and optimize their budgets and explore alternative sourcing mechanisms to offload some service delivery.

- **Actuarial systems conversion and consolidation.** After numerous large consolidations within the insurance industry, many actuarial functions are using duplicative IT systems to complete the same tasks. Maintenance costs are at an all-time high. Consequently, companies are looking for ways to reduce the number of systems.

It is no longer sufficient for an insurance actuary to exclusively model, analyze, and estimate. Company leaders expect actuarial employees at all levels to provide business insights and value drivers to aid strategic decision making. However, many actuarial organizations lack the advanced capabilities, processes, and technologies they need to meet stakeholders' changing expectations. In response, astute chief actuaries are exploring how to modernize their organization's actuarial operating model.

Defining the actuarial operating model

An operating model is variously defined as the overall approach an organization takes to complete a task using the resources available to it or how an organization uses people, processes, and technologies to meet the needs of its customers. More simply put, it's the WHO, WHAT, WHERE, WHEN, HOW, and WHY of getting work done:

- WHO: the people doing the work

- WHAT: the goal of the work being completed

- WHERE: the location(s) at which the work is completed

- WHEN: the timeframe during which the work is completed

- HOW: the process(es) used to complete the work

- WHY: the reason(s) the work is being completed.

Many of the inefficiencies in today's insurance actuarial operating models center on the WHO and HOW of getting work done: Senior actuaries are doing work that other employees could be doing. Underdeveloped relationships within and outside the actuarial function often limit access to valuable expertise, and many actuarial processes are not automated. Optimizing the "who" and "how" of getting work done should, therefore, be a primary focus of modernizing a company's actuarial operating model.

Not all actuarial work is truly actuarial

For a long time, actuarial organizations have been immune to cost pressures due to the complex nature of their employees' work. However, it is becoming clear that not all actuarial work is truly actuarial and certain tasks (e.g., data manipulation) should be automated, transferred, or shared with other departments. This is leading company C-suites to rethink what an actuarial department should look like, how it should operate, and what it should cost.

Increasingly, the actuarial function must be able to:

- **Provide more value-add with less head count.**

- **Generate more insight and foresight**, less data management and hindsight.

- **Find creative ways of getting things done** by developing new, technology-enabled processes to accomplish operational tasks and meet strategic objectives.

- **Design and execute a governance framework** for actuarial assumptions, methodologies, and processes to produce transparent audit trails and provide assurance to management, regulators, and external audiences.

- **Manage increasingly complex actuarial models** that are likely to require sophisticated calculations for planning, budgeting, forecasting, pricing and product development, capital planning, financial reporting, and asset liability management.

- **Plan for and strategically invest in next-generation technologies** that are more flexible, customizable, and automated. This likely will require investments in technical infrastructure, clean asset and liability data, and well-governed models and assumptions.

- **Provide financial reports quickly and accurately** and be able to explain—quantitatively and qualitatively—results and drivers, accounting base differences, and expectations.

- **Produce more sophisticated analysis** that connects historical performance to forward-looking projections and provides a drivers-based view of variances.

- **Connect and integrate with related functions** to mitigate the risk of talent gaps and enable proper leadership—not just calculation—from the actuarial function.

Looking at the function through an increasingly strategic, value-focused lens, insurance actuaries should expect that questions and demands will come from all corners of the enterprise.

Stakeholder questions and demands on the actuarial function

Stakeholder	Questions	Demands on actuarial function
C-suite	• How profitable is product line X? • What is the financial plan for next year? • What is driving variations from plan? • What are the key enterprise risks? How is the company mitigating these risks? • What impact will sudden economic shifts have on the business? • What new directions should the business take?	• Provide greater and more timely analysis • Supply reliable management information • Maintain a clear understanding of risk • Effectively communicate trends and explain results • Be proactive; lead rather than react
Business unit leadership	• How does the actuarial function balance the responsibilities of the business unit with the oversight challenges from corporate and other stakeholders? • How can business units share resources across the organization to lower costs? • How can the company boost core profitability?	• Focus on providing value-added insights; delegate appropriate tasks • Develop a center of excellence where resources can be pulled to meet corporate and business unit needs • Partner with IT to handle data cleanup that actuaries historically have owned
Regulators/Rating agencies	• What are the drivers of change in results? • What is the current capital position? • When can company actuaries perform new, complex capital calculations? • What are future profit prospects and how might those be impacted by the current market environment? • How will new accounting or regulatory changes impact the business?	• React to a changing regulatory environment • Clearly explain drivers of change
Board of directors	• What will results look like if the company tries to acquire, reinsure, or sell a block of business? • How can the company interpret these financial results? • Does the organization have the right actuarial leadership in place?	• Delivery of what-if analysis • Promote risk-aware culture
Audit committee	• How many days does it take to close the books? • How many valuation errors has the company had recently and what were the causes? • How does the control environment stack up against competitors? • What are the company's major risks and strategies to address them?	• Error-free valuation • Risk-focused control environment • Enhanced documentation

Drilling down to the tactical level, the insurance actuary of the future will need to possess a different and/or expanded skill set to effectively interact with and serve a more diverse internal customer base. Companies also are likely to value current employees and new hires with demonstrable communication, problem-solving, and critical business-thinking skills, as well as a tech-savvy perspective.

Managing people, robots, and AI: Emergence of the Exponential Actuary™

Driven by the acceleration of connectivity and cognitive technology, the nature of work is changing. As artificial intelligence (AI) systems, robotics, and cognitive tools grow in sophistication, almost every job is being reinvented, creating what many call the "augmented workforce." As this trend gathers speed, insurance organizations must reconsider how they design jobs, organize work, and manage a future workforce with people, robots, and AI working side by side.[2]

Several years of Deloitte Human Capital's research into the future of work shows that one of the new rules for the digital age is for organizations to expand their vision of the workforce. This means thinking about work in terms of tasks that can be automated (or outsourced) and the new role of human skills and focusing even more heavily on the customer experience, employee experience, and employment value proposition for people.[3]

For example, actuaries are often overburdened with significant stewardship activities related to the maintenance and production of data, processes, systems, and reports. Insurance companies looking to improve the return on the actuarial function are turning to a number of technology enablers—IFRS process modernization, data integration, content management, natural language generation, and diagnostics dashboards—to increase efficiency and activate/accelerate business strategies and insights across the actuarial value chain. It's a next-generation modernization approach that Deloitte calls the Exponential Actuary™.

Insurance companies interested in applying an Exponential Actuary™ approach to their modernization efforts should begin by considering its potential impacts across a number of dimensions:

- What parts of a job can be automated, and what is the "human value-add" around these skills?

- How can we re-skill and retrain people to learn new technology and tools faster, and how can we design the technology so it takes almost no training to use?

- Where does the work—and more specifically, each individual task—need to be done? What physical proximity is required to serve customers and to design and develop products and services?

- How can we crowd-source activities—and use contingent, freelance, and gig economy talent—to save time and money, increase quality, and improve operational flexibility and scalability?

- How can we redesign the workplace to be more digital, open, and collaborative, yet provide opportunities for development, growth, and focus time?

- What is our organizational and work design capability, and have we explored the ways machines can cross functional boundaries to move people from merely executing tasks to delivering strategic, value-add work?

Modernizing the model

Actuarial modernization can help insurance companies assess and transform processes, systems, and people in both centralized and decentralized operating models. When designed and implemented hand-in-hand with senior management and other key corporate functions—especially finance and IT—actuarial modernization can improve the overall value of the function as an important contributor to strategic business and financial decision making.

Actuarial modernization is composed of multiple components which, when applied in concert, can drive robust efficiencies across the organization. To holistically update the actuarial operating model, companies first need to understand the traditional and new views of seven operational components and the ways they interact: people and talent, process, governance, service delivery, data, technology, and policies and procedures.

People and talent

How companies traditionally have thought about it
- Talented employees rise through the ranks of the organization in a linear, vertical fashion.
- Talent development is conducted through a formal process, primarily led by employees' direct supervisors.
- Talent is relatively immobile (outside of common actuarial rotation programs) due to restrictions based on which unit hired the employees or pays their salaries and an inability to match actuarial work with the skill sets of employees elsewhere in the organization.

A new view
- As organizations move from a functional structure with strict hierarchies to one that is more team-based and/or matrix-oriented, companies should place renewed emphasis on talent assessment, acquisition, development, and mobility.
- Supervisors should identify actuaries with unique skill sets (such as modeling expertise) and leverage those skills to influence as many projects (and peers) as possible.
- Management should allow (and encourage) actuaries to assume more strategic, nontraditional roles—risk, underwriting, finance—to drive value-added work.

- As processes are automated, actuaries will have to learn traditional actuarial concepts currently acquired through the trial and error of executing lower-level tasks. This will force actuaries to focus on the application of these concepts instead of just the calculation process itself.
- Activities will be completed using contingent, freelanced, and contract professionals

Process

How companies traditionally have thought about it
- Actuarial processes are time-intensive and difficult to automate.
- Actuarial processes are "too nuanced or specialized" to delegate to non-actuarial teams.
- Actuarial work is often manual in nature and must remain that way due to its complexity.

A new view
- Outside of analysis, actuarial processes often may be more efficiently handled by other teams or processes.
- Companies should seek out and leverage technology that can be applied to actuarial processes:
  – New software applications can accelerate data manipulation.
  – Natural language generation (NLG), advanced scripting, and robotic process automation (RPA) can free up actuaries' time to focus on analysis and strategic, value-added activities.

Service delivery

How companies have traditionally thought about it
- Actuaries are heavily involved in all processes affecting actuarial balances including data preparation, model building, infrastructure development, data warehousing, and reporting/analysis.
- Actuaries are organized by function (valuation, enterprise risk management [ERM], asset/liability management [ALM], pricing, reserving) and within line of business (annuities, life insurance, personal, commercial, retirement, etc.).
- Actuaries often are centralized in one geographic region—for example, at the company's headquarters.

2. Schwartz, J., et al. (2017). Rewriting the rules for the digital age - 2017 Deloitte Global Human Capital Trends. "The Future of Work—The Augmented Workforce," https://www2.deloitte.com/us/en/pages/human-capital/articles/introduction-human-capital-trends.html.
3. Ibid.

A new view
- Service delivery should focus on deploying mobile teams with targeted skill sets across the organization such as a modeling center of excellence (COE).
- Shared services models can be used to centralize and more effectively execute processes (e.g., valuation production).
- Non-actuaries can support certain actuarial tasks, such as project management, process management, operations, and data management.
- Increased use of flexible actuarial pools—talent that can be deployed across products/functions/business units—can help meet fluctuating demand.
- Companies should consider noncentralized staffing models that move or outsource work to lower-cost geographic regions or to specialized staff.

Governance

How companies traditionally have thought about it
- Governance is a compliance burden forced upon actuarial departments and has limited added value for the company.
- Governance only expands the time that a project takes; it cannot be used to save time or reduce resource expenditures.

A new view
- Governance should be a key consideration when designing an actuarial organization's structure—the increased use of mobile teams, COEs, and non-actuarial resources should not reduce the strength of governance and risk management capabilities.
- Strong governance can reduce time spent on actuarial activities by limiting errors and time spent fixing them.
- Governance should avoid being a "death by a thousand cuts"; organizations should focus on instituting strong levels of governance with clearly defined goals.
- Companies should pay special attention to governance of increasingly automated processes; it is critical to maintain adherence to professional standards.

Data

How companies traditionally have thought about it
- Actuaries are regarded as data experts due to a history of manipulating data to make it fit for a specific purpose.
- Actuaries own the data through the entire process of acquiring, cleaning, processing, and evaluating it.
- Actuaries rely on legacy administrative systems as their core source of data, although these systems were not developed specifically for actuarial use.

A new view
- Actuaries should not continue doing "data jockeying" work as the organization's focus shifts to improving speed and reliability.
- Actuaries should develop better business requirements to enable IT and other integrated services to deliver the support actuaries require.

- Actuaries should use tools that support data management to improve data processing.
- Where possible, actuaries should look beyond administrative systems and databases developed by actuaries for places to obtain and store actuarial data.

Technology

How companies traditionally have thought about it
- Technology tools can help actuaries work more efficiently, but often times, actuaries end up in charge of implementing the technology itself.
- Actuaries often believe that technology partnerships on actuarial initiatives lead to long implementation timelines and cost overruns.
- Actuarial system conversions will solve all actuarial process and analysis problems.

A new view
- Legacy systems may not help actuaries execute as efficiently as they should; however, updating actuarial technology should add demonstrable value, such as providing better access to data (touchless valuation).
- In a modernized operating model, technology is implemented and owned by IT; actuaries build business requirements and provide insight and assistance during development.
- "Applicable technology" is no longer limited to actuarial platforms. Actuaries should access the broad spectrum of technology to improve process and performance.

Policies and procedures

How companies traditionally have thought about it
- Actuaries have expended considerable energy developing policies and procedures for model validation, model development, and assumption setting.
- Actuaries have started to consider opportunities for policies relating to standard operating procedures for various processes.

A new view
- Insurance actuarial organizations should have clear policies and procedures in place and apply the right tools and people to a situation.
- The only "official" actuarial numbers will come from production environments and locked-down systems that have gone through rigorous change management.
- Standard operating procedures and guidelines are required for key processes and capabilities.
- If a policy is embedded in a process that employees are expected to follow, that policy will be enforced.

Numerous benefits, considerable challenges

Traditional actuarial operating models generally lack the agility to respond to stakeholders' increasing expectations. Modernizing the operating model can help actuarial organizations deliver greater value at a lower cost. Potential benefits are both quantitative and qualitative and may include:

- Reduced technology and operating expenses

- Faster and more accurate actuarial analyses

- New depth and granularity of insights

- Improved responses to regulatory and market forces

- Engaged, satisfied, and strategically focused actuarial professionals

Many larger insurance companies already have incorporated some aspects of actuarial modernization into their operations. However, in general, insurance companies have a considerable amount of work ahead of them if the goal is to implement modernization programs across the enterprise. Among the challenges:

Acknowledging that change is necessary. Insurance industry culture typically is slow to embrace change. Many companies have long underinvested in their actuarial platforms and data, and executives have rarely asked the function to right-size talent. Many practitioners have a mind-set of "if it's not broken, don't fix it." Actuarial operating model modernization needs strong executive and project leaders who can drive change in a forceful, yet measured and safe environment.

Securing stakeholder buy-in. Senior-level actuaries may recognize the need to modernize their organization, but are rank-and-file employees open to the possibilities that automation provides? Some may fear losing their job to a robot when, in actuality, automation may free employees from mundane tasks and give them more time to do the satisfying parts of their jobs. On the flip side, modernization may force some actuaries to up their game because they will be expected to complete more strategic work.

Strengthening the relationship among actuarial, IT, and finance organizations. Actuaries generally underappreciate the need to partner with IT and finance. Yet, an operating model modernization project directly impacts all three organizations. If responsibility and accountability are not shared, the project may be less likely to succeed. Competing agendas may slow momentum, as may underestimating technology and data challenges (e.g., who owns the data, who handles systems maintenance). The most appropriate executive to drive the project may be the chief financial officer (CFO) because finance is where all the elements come together. However, the CFO should work hand-in-hand with his or her actuarial and IT counterparts.

Finding the time to modernize. Most actuaries are so busy carrying out their daily jobs that they do not have time to engage in a modernization effort. The cost of their time is another issue—project leaders need to consider the business value of the employees they apply to operating model modernization versus other work. Dedicating specific internal and external resources can keep the project moving forward while allowing the bulk of employees to handle business as usual.

Taking action

Under a new operating model, insurance actuarial organizations could have a larger sphere of influence, a closer partnership with IT and finance, and fewer people due to placing services with their proper owners (e.g., data management with IT). Chief actuaries, by extension, are expected to take a more visible seat at the C-suite table when their peers begin to view actuaries as a source of ideas and strategic value rather than just a conduit to information.

To move a modernization project forward, actuarial executives and functional leaders can hold a workshop to discuss and align around their vision of the future organization and address specifics within the following work streams:

People and talent

- Lay out a future-state organizational talent chart without constraint. Identify needed skill sets and plans to develop them. Put roles, not names in boxes. Create job descriptions that include desired employee skills.

- Make sure the right talent is doing the right work. Evaluate opportunities to reorganize actuaries in ways that are not constrained by typical function/line-of-business barriers.

- Develop a framework for developing and deploying talent so that employees have the freedom to move across departments, functions, and other common organizational barriers.

- Align talent assessment and employee compensation so that it rewards high performers based on work product, skills use, and development, etc.

- Strengthen recruiting practices. Find the best people (internally and/or externally) to become a part of the future operating model.

- Take a fresh look at actuarial staffing needs with an eye to right-sizing the organization based on core work responsibilities and employee skill sets.

- Communicate clearly and frequently to those affected about proposed organizational changes. Seek employee input and share success stories.
- Cultivate development of a more strategic mind-set within the actuarial team.

Process

- Catalog and pixelate the processes currently performed by actuarial staff to identify their core components and determine how many of them truly require actuarial expertise versus other resources. Reassign noncore tasks as appropriate.

- Recognize where similarities exist in processes and functions; they may provide optimization opportunities by aligning like processes with one person (e.g., an IT resource rather than an actuary).

- Identify processes that could use technologies such as NLG, advanced scripting, or RPA, and source solutions elsewhere in the company or from vendors.

- Do not be constrained by current practices. Take away organizational and technical barriers and ask, "Do we need to do this step at all? Can a machine do it rather than a person? What would a streamlined or automated process look like?"

- Communicate the relevance of modernizing established actuarial processes in the context of the business benefits that may result. Why is this important?

Service delivery

- Strive to deliver more strategic, value-added services. Get to know stakeholders and their needs. Learn from leading practices both inside and outside the insurance industry.

- Question the status quo of each work product. Is it strategically adding value? Is it still needed by the organization, or is it addressing an old request?

- Develop a bench or flexible pool of nimble actuarial talent to function as surge resources. Co-source work with other departments; look for opportunities to use crowdsourcing to inexpensively increase resources during periods of high demand.

Governance

- Instill governance and accountability within the organization's culture so that, as actuaries move across functions or work with diverse groups, the foundational expectation for strong governance exists enterprise wide.

- Construct a future-state organizational design that focuses on proper, thorough checks and balances.

- Consolidate IT systems and disparate processes to increase efficiency, improve security, and reduce potential for errors.

- Rethink the role and importance of governance in an increasingly automated, yet professionally accountable organization.

Data

- Embrace and focus on data; it is both an essential asset and a potential liability. Make sure all IT systems and data are accessible and reliable.

- Map out where and how actuarial data are obtained, processed, fed into models, reported, and analyzed. Rework processes so that actuarial employees focus solely on reporting and analysis. Rely on IT to handle other processing and data-related tasks.

- Identify new data acquisition sources and storage repositories.

- Implement new data management solutions to improve speed, reliability, and flexibility.

Technology

- Make sure that IT projects address actuarial needs so that actuaries no longer have to create and implement their own data sources.

- Use mobile teams for actuarial technology projects so lessons learned from one project can be applied to others.

- Think broadly. Develop a sensing mechanism for applicable technologies by partnering with internal and external resources in the technology ecosystem.

Policies and procedures

- Increase standardization and consistency.

- Embed policies in processes and enforce them.

A new model for a new role

Traditionally, insurance actuaries primarily have played a stewardship role: one focused on the blocking and tackling of producing financial statements for compliance purposes. Today, however, senior executives expect company actuaries to be more proactive and strategic. By embracing a new, technology-powered operating model that frees them from the constraints of business as usual, actuaries can provide valuable information and insights more quickly and inexpensively, expand their skill sets, and become catalysts for strategic change.

Contacts

Matthew Clark, FSA, CFA, CERA, MAAA
Principal
Deloitte Consulting LLP
matthewclark@deloitte.com
+1 312 486 0185

Jason Morton, FSA, MAAA
Principal
Deloitte Consulting LLP
jamorton@deloitte.com
+1 612 397 4048

Bruce Fell, FCSA, CFA, CERA, MAAA
Principal
Deloitte Consulting
brucefell@deloitte.com
+1 215 446 4337

Darryl Wagner, FSA, MAAA
Principal
Deloitte Consulting LLP
dawagner@deloitte.com
+1 860 725 3165

Tony Johnson, ASA, MBA, MAAA
Senior Manager
Deloitte Consulting LLP
tojohnson@deloitte.com
+1 312 486 4753

Deloitte.