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The Next Step Forward: Can One Actuarial System Do It All?

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ACTUARIAL SYSTEMS IN THE UNITED STATES

If an insurance organization were a living organism, actuarial systems would be the oxygen—central to framing strategy, vision, and day-to-day management of the business. The breadth of actuarial model demands, coupled with the increasing complexity of products, has made actuarial models extremely valuable and yet, at the same time, incredibly difficult to manage. Building and maintaining a sound modeling framework should be a priority for insurance companies.

Actuarial System Evolution Is Underway

The actuarial function in most insurance organizations is known for delivering solutions to complex and difficult problems. Typically, actuaries are by their very nature problem solvers, regularly building new or adapting existing tools to address emerging business and regulatory demands.

At the same time, actuarial system solutions have often been designed to address specific needs with limited cross-functional considerations. Duplicative versions of models often exist, each addressing a specific function, product, requirement, or modeling purpose. This patchwork of system solutions has led to a complex systems architecture that can be difficult to efficiently and effectively manage and maintain.

Many companies have been investing significantly, both in hard-dollar spending and in time spent by actuaries and IT specialists, to maintain an environment containing multiple tools, platforms, and technology solutions. Managing multiple platforms is often time-consuming and unwieldy. It can lead to errors stemming from difficulties to reconcile and an erosion of actuarial talent who may have become frustrated that they lack the tools needed to complete their day-to-day tasks. Generally, actuaries should be users of tools, not maintainers of systems.

This phenomenon appears to be specific to the United States, given insurance companies' need to adhere to multiple reporting standards. Elsewhere in the world, many companies have moved toward a single actuarial modeling system that handles business requirements from pricing and financial reporting to

projection and risk modeling. After speaking with several United States insurance leaders, it appears that the next evolution of actuarial modeling in the United States will likely push toward a single-system solution as well.

What Is a Single-System Solution?

A single-system solution is the use of one system for all actuarial calculation uses for a given product, line of business, or company, a modeling platform that is shared by all users and supported across functions. The solution shares product configurations, best-estimate assumptions, and the calculation of product cash flows across all actuarial system uses. Specific assumptions, calculations, and outputs for a given purpose are activated as needed via switches.

The next evolution of actuarial systems in the United States will likely be a move toward a single-system solution.

For millennia, the North Star has guided navigators on their journeys to new destinations. A single-system for all actuarial needs and shared across all actuarial functions is a key component of the “North Star” long-term vision for more and more United States insurance companies.

Common Benefits of a Single-System Solution

The vision of a single-system solution for actuaries in the United States now has the potential to become a reality. A single-system solution can enable companies to realize strategic benefits, such as the following:

- **Increased efficiency.** A common platform should reduce the amount of resource time spent on redundant system development and maintenance. Additionally, analysis processes can be streamlined as different model views are more easily combined into a meaningful, organized output.
- **Flexibility to adapt.** While governance and change control may be more rigorous in a single-system environment, a single-system solution is likely to be more flexible to adapt and respond to tomorrow's needs than the “Frankenstein” patchwork systems that are prevalent.
- **Flexibility to respond.** As demands from external regulators and internal stakeholders increase, a single system has

the ability to quickly and efficiently respond to demands for multiple runs, ad-hoc analyses, and scenarios by quickly adjusting the inputs and model specifications. New analyses and reports can be produced quickly and efficiently.

- **Production/development teams.** Clear separation of duties can more practically be established with separate teams—one responsible for all system development (i.e., coding model changes) and one responsible for reporting and producing official results.
- **More comprehensive and insightful analysis.** Management can benefit from more detailed, timely analysis and increased consistency between internal views and risk decisions. A strong, integrated modeling platform enables detail that previously was not often available, approximated, or well understood.
- **Reconciliation of results.** A single-system solution can simplify and streamline reconciliation between asset liability modeling (ALM), risk management, statutory, and generally acceptable accounting principles (GAAP) results.
- **Enhanced governance.** A single-system solution is likely to drive significant enhancements to model governance and controls all aspects of modeling and will simplify the effort required because having fewer systems means fewer controls to maintain.
- **Talent focus.** A single-system solution can help talented actuaries focus on actuarial analysis rather than system maintenance across a patchwork of systems.

A common actuarial computing platform can enable insurers to realize strategic benefits, such as increased efficiency, more comprehensive and insightful analysis, and flexibility to respond to emerging demands of stakeholders.

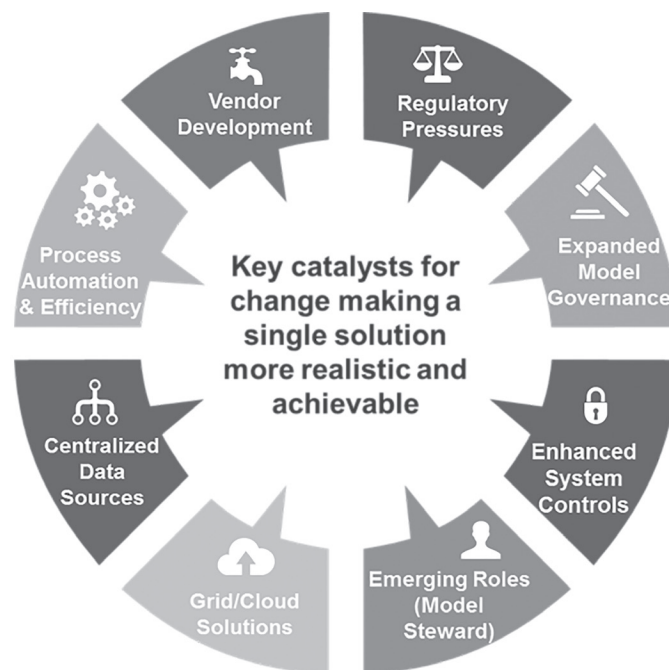
CAN ONE SYSTEM DO IT ALL?

One of the most significant hurdles that have kept some United States insurance companies from considering a single actuarial computing platform has been limitations in the vendor sys-

tems available to the U.S. market; in particular, valuation results should stand up to external audit and often must be produced at a seriatim level, but asset-liability systems have historically been lacking in valuation capabilities.

Catalysts for Change

In recent years, several developments have occurred that help make a single-system solution more realistic:



- Some vendors, in response to client demands and in light of emerging technology infrastructure, have invested in refining the functionality of their systems to produce a wide range of analyses capabilities. Models can be designed to address many requirements at once or swap specific data elements or calculations with the flip of a switch.
- Regulatory pressures have helped shift traditional valuation requirements toward a more principles-based approach. This has blended the definition of a projection and valuation system and has driven projection system vendors to offer enhanced valuation controls in their projection models.
- System controls and production environments are more typical and no longer apply just to valuation models. Systems now allow multiple users of a common model and address the need for specific permission sets.
- Controls and governance, once mostly focused on the valuation area, have expanded to other areas of actuarial modeling, such as projections and asset/liability modeling.

Projection-modeling teams are generally now being held to higher governance standards.

- The creation of new actuarial roles such as Model Steward has helped address concerns over consistency complicated by multiple model owners while continuing to promote the importance of governance.
- Enhanced grids and cloud solutions have enabled more complex, dynamic analyses to be produced in a timely fashion. Adopting platforms that are well integrated with technology has helped many insurers become more nimble in their decision making.
- Many insurers have become more conscious of the need to centralize data sources and provide common definitions for key actuarial system inputs. In some cases, this has led to the development of data and/or assumption warehouses, which can be linked directly to source the single actuarial model.
- Many insurers are increasingly focused on process automation and efficiency, including tools that enable scheduled model runs that can maximize run-time efficiency. These tools also offer the opportunity for review and approval at key steps of the process to establish proper controls and limit reruns.

OVERCOMING OBSTACLES

Integration of actuarial systems into a single platform sounds great, but is it realistic? We believe the answer is “yes” when integration acknowledges the potential impact on company culture and includes a fresh look at the operating model, effective architecture design, and expansion of governance standards.

There is often apprehension that a single-system solution will become unwieldy, prompting these common questions:

- Will a single-system solution slow me down?
- Will my pricing function lose the flexibility needed to properly carry out their work?
- How can I trust a model I don't own?
- What if another user impacts my model?

Usage of a single actuarial system is a marked shift in the way that most actuaries are accustomed to working. The biggest hurdle in implementing a single-system solution is often the culture change necessary to give up model ownership to the company.

Culture Change

A single-system solution generally does not lend itself to the way many insurers operate today; however, an effective operat-

ing model, organization design, and model governance structure can increase the likelihood of effective implementation. Recognition of company-specific cultural norms is key to developing an implementation and governance plan that can mitigate these concerns.

In many instances, significant investment in, and change management of, model governance and controls will be necessary. With a single-system solution, users must shift from model ownership to a shared actuarial system where the user owns the model requirements rather than the model itself.

Model Development and Architecture Design

Moving to a single-system solution involves more collaboration and more attention to upfront system requirements, integrated design, and focused testing. Some insurers have been reluctant to push their actuaries to move toward an IT-type development approach, because control of system development has historically been considered a key aspect of model ownership. In a single-system solution, the system is truly owned by the company. Business users are responsible for submitting business requirements to a development team that designs, implements, and tests model changes across all business use cases. Model changes can no longer happen on the desktop—they must be controlled through computing environments. All changes must undergo full regression testing, and models must be stored and maintained in a production environment.

The biggest hurdle in implementing a single-system solution is likely the necessary culture change.

To realize some of the demonstrated benefits of a common model, actuaries should consider the rationalization of methodologies, assumptions, and reporting. Models should also be designed to provide flexibility to change methods, assumptions, and granularity for each model purpose. In addition, models should be designed to be “future-proof” with sufficient flexibility to address both the rigor of valuation and the flexibility needed for pricing and unknown future modeling requirements.

Operating Model and Organizational Design

Effective implementation of a single-system solution may involve a fresh look at the actuarial operating model. New roles and responsibilities can help facilitate the necessary culture

change to move toward a shared ownership of models, assumptions, methodologies, and processes. New roles may also be necessary to centralize or standardize model development and change management, as well as to oversee model governance, testing, and documentation.

THE ROAD AHEAD

The opportunity for an insurer to reposition the development, maintenance, and management of actuarial systems starts with insurers taking stock of where they are today versus a “North Star” vision of where they would like to be in the future.

The vision should be free of any current constraints within the company’s current models, systems, and processes and should be augmented with an assessment of potential benefits.

Achieving a single-system solution necessitates a well-articulated vision and commitment to collaboration and change, both at the top of the organization and through the ranks. Once all stakeholders support the vision, a roadmap can be defined to help guide the company toward its ultimate goal.

CONCLUSION

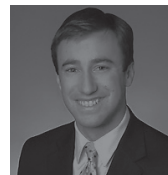
As many insurers begin to reevaluate the competitive landscape and assess their ability to deliver against emerging market demands, it is clear that the environment is changing, and multiple platforms with multiple purposes are generally becoming increasingly difficult to manage. Many industry leaders are looking for ways to address this concern through a single-system solution as part of a broader actuarial modernization initiative. Once thought to be unattainable in the United States, a single-system solution is now viable because of the emergence and advancement of actuarial systems, the surrounding governance, and the technology available to support them.

The pursuit and ultimate achievement of a “North Star” vision involves a significant cultural shift that may be a daunting challenge. However, recognizing the complexity of this vision, along with its potential benefits, enables companies to put the proper infrastructure in place to support and ultimately realize the potential of a single-system solution as a market differentiator that can create a significant strategic advantage.

The potential payoff for such an investment is significant and compelling. ■



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