



Actuarial Modernization

Building and Implementing the Concept of
Continuous Improvement

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Introduction

For many insurance companies, actuarial modernization or transformation began shortly after the 2007-2008 financial crisis. For Western & Southern, actuarial transformation began several years before that critical event. The impetus for initiating a transformation was to gain operating efficiency by refining and consolidating various activities across the company's actuarial group.

The Western & Southern actuarial transformation has not been an event pursued for one year, or two years, but rather a journey extending over more than 10 years. During this journey, accomplishments and incremental benefits have continued to accrue to the transformation initiative.

Over time, many of the accomplishments and benefits extended well beyond the actuarial group to numerous other business units across the enterprise.

Much of the success of the actuarial transformation is attributable to the original planning. Key to the original planning was to "take the long view." Fundamentally, the long view considered not only the immediate needs and issues but future business information needs, market environments, acquisitions, regulatory considerations, technology advancements, and other forward thinking criteria.

Keeping the future considerations in mind provided a basis to more thoroughly assess and analyze the immediate programs and activities being pursued in the short term and their implications in the longer term.

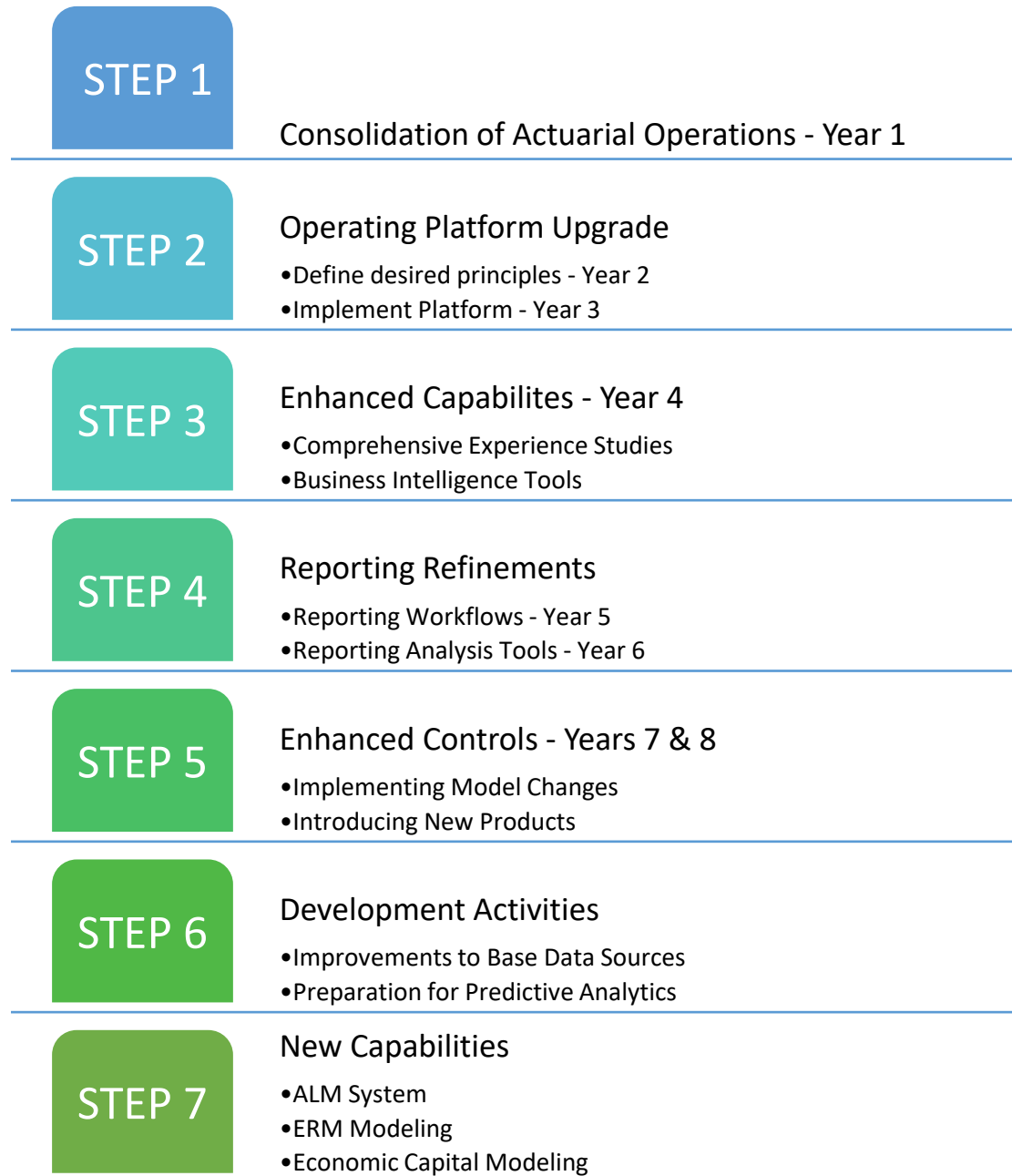
Western & Southern Financial Group

Western & Southern Financial Group offers a variety of life insurance products and annuities, accident and supplemental health coverage, mutual funds and other investment management products, services and solutions.

Western & Southern also operates Fort Washington Investment Advisors to manage public and private equity assets for corporate and government institutions and wealthy individuals. Fort Washington additionally contributes to asset management of the entire enterprise. Other member companies include Columbus Life Insurance Company, Eagle Realty Group, IFS Financial Services, The Lafayette Life Insurance Company, Touchstone Investments, Western & Southern Life, W&S Financial Group Distributors, and W&S Brokerage Services.

Chain of Events

As the transformation began to take form, a series of events occurred that shaped the progress contributing to the accomplishments and benefits accruing to the initiative.



Concurrent with the first four steps in the process, the actuarial group participated in assimilating several acquisitions. These statements of the events are intended to provide a point of reference as the entire transformation is presented in the following pages.

Initiating the Transformation

Western & Southern's actuarial group began with a plan to initially gain operating efficiencies and improve the quality of analyses and controls that, over time through a practice of continual improvement, has created a state-of-the-art actuarial environment.

The actuarial operating environment is "borderless," extending throughout the business units comprising the enterprise, to fulfill numerous diverse types of analytical information needs.

Early on during the integration of the first acquired company, many challenges were encountered by the actuarial group. These challenges, plus the potential for additional acquisitions, contributed to the need to transform the actuarial operation.

Within a brief period of time, as the transformation began to take a more definitive form, the initiative led to establishing a guiding principle.

Since inception, the transformation has been directed at supporting Western & Southern's strategic goals and financial performance objectives, as well as consistently being aligned with the company's key culture principles.

The Guiding Principle

One of Western & Southern's key guiding principles is to take the long view, which considers not only the near-term needs and issues but also where the actuarial group should be positioned in the future. The future positioning is in anticipation of the changing profile of the entire Western & Southern enterprise, changes such as new product offerings, expanding markets served, and potential acquisitions.

Seven initiatives are the underpinning of the guiding principle and continue to contribute to the ongoing success of the transformation.

- Engage and collaborate proactively with the business units across the enterprise.
- Establish an environment enabling more extensive analysis of the cause for outcomes.
- Continue development of modeling and data-related analytical competencies.
- Invest in and fully leverage the best technology tools and data management resources.
- Establish a repository of data recognized as being of the highest quality.
- Practice rotation of the actuarial management and staff across the enterprise.
- Institutionalize the process of continuous improvement.

As would be anticipated, at times it has been difficult to sustain taking the long view. This is often the case when potential short-term gains were not pursued, because they were

considered to be in conflict with achieving where the actuarial operation wanted to be positioned.

The initiatives comprising the guiding principle are continuously re-examined and, when applicable, enhanced to ensure the actuarial group is positioned to support achieving the Western & Southern strategic objectives.

Executing the Transformation Plan

The initial transformation plan was comprised of six straight- forward elements, the first two being of greater immediate importance.



Albeit, as the first two elements represented the beginning of the transformation initiative, it is important to note these elements were directed more inward to the actuarial group. The next two elements represented somewhat of the longer view, involving more analysis and planning. The remaining two elements speak to building relationships and resources across the enterprise.

Operating Efficiencies – As Western & Southern grew in terms of operating companies, diversity of products, and markets served, operating efficiencies became necessary to effectively fulfill the expected actuarial deliverables to support the company’s business goals.

Consolidation – The strategy to consolidate the different actuarial practices, in addition to processes and tools that were in place, created opportunities to improve effectiveness. This initiative was associated with the need for efficiency but also served to establish better visibility into the conduct of the actuarial activities. Additionally, the consolidation established a basis to introduce collaborative workflows, enhanced monitoring and controls, as well as to examine and select best-in-class tools.

Knowledge - The point relating to improving the knowledge of the available data became extremely important, and over time, has been instrumental in terms of achieving many of

the benefits. With the growth of data, the need to establish a content rich data repository, representing data of the highest quality, become extremely important.

History and Trends - As the knowledge of the available data grew, coupled with reviewing history and emerging trends, a fourth element became apparent - the requirement to reach well outside the normal actuarial operating envelope. Reaching outside the actuarial operating envelope required engaging other business units more proactively, in substantially more depth.

Collaboration - Pursuing the fifth element has created a collaborative culture among the actuarial group and business units being served as well as those business units serving the actuarial group. This particular point is associated with creating the “borderless” environment.

When considering the success attributable to the transformation initiative, collaboration clearly has been and continues to be a lynchpin.

Flexible and Scalable Actuarial Tool Platform – The best-in-class actuarial tools have been deployed to establish the platform to achieve the desired operating efficiencies as well as to deliver the capabilities required to fulfill the analytical needs of the business.

There certainly have been challenges that required rethinking direction and refining planned activities. However, taking the long view has been beneficial when examining and positioning the challenges in the context of the transformation’s overall goals.

Accomplishments and Benefits

While the accomplishments and benefits being experienced during the early stages of the transformation continued to contribute to enhancing the delivery of insightful information, incremental benefits are being experienced as the transformation continues to progress. It is important to note not all the collaboration, efficiencies and outcomes were originally planned or anticipated but have been realized as the idea of continuous improvement has been pursued.

Efficiencies and Effectiveness – Among the initial goals of the transformation has been to gain operating efficiencies and to improve effectiveness in terms of conducting the actuarial analyses necessary to support the business. As the transformation began, operating practices were thoroughly examined and opportunities to introduce refinements were identified and implemented.

As the operating practices were reviewed, attention was given to identifying actuarial activities that were manual in nature and, therefore, candidates for automation. Frequently, tasks associated with identifying and assembling the data necessary to conduct

analyses required considerable manual effort. It was also observed that substantial time was being devoted to validating the accuracy of data.

Many processes were found to be overlapping and, at times, redundant. The examination of new actuarial tools found deploying these tools would replace many of the processes and simultaneously improve monitoring and control.

The refinement and re-structuring of the practices and processes, introduction of new actuarial tools and ultimately developing the actuarial database established the foundation needed to conduct more comprehensive, in-depth analyses on a timely basis. These combined activities to create the best actuarial operating environment began early during the transformation and extended over several years.

A combination of introducing best-in-class actuarial tools and establishing an actuarial book of record database has contributed to creating highly effective and efficient workflows. Frequently, these workflows extend beyond the actuarial group to other Western & Southern business units, creating a highly collaborative, interactive and refined working environment across the company.

Over time, many previous time-consuming, inefficient activities have been eliminated either through automation and/or introducing upstream processes and controls such as the procedures to ensure the high degree of data integrity for the actuarial database inputs.

Many of the workflows incorporate initiating tasks automatically to be processed immediately or overnight, which provides for conducting analyses in much less time and facilitating additional analysis.

Valuation is an example of the considerable efficiency gained during the transformation. Rather than nine individuals conducting valuations for three entities, there are now seven individuals conducting valuations for six entities. Additionally, efficiencies and workflows have enabled preparation of financials at the end of accounting periods to be completed for all six companies within five days, including an explanation of the results from the actuaries.

Actuarial Book of Record

The actuarial book of record has been established with the development of a master file (database) of data extracted from associated administrative, financial and surrounding

Central to gaining the desired operating efficiencies and effectiveness has been establishing an actuarial book of record representing high quality data to support actuarial activities.

application systems. The database stores the information to support the core actuarial requirements plus other data utilized to assist conducting a variety of analyses for various business units.

Since the book of record data would be extracted from numerous source systems across Western & Southern's technology ecosystem, rigid controls and processes to ensure the highest degree of data integrity were developed and implemented.

The core database was developed using the ARCVAl system, which includes an embedded data management facility, ARCBASE. The ARCBASE capabilities are designed specifically to support actuarial data required to fulfill analytical modeling and reporting needs. The provider of the core database facility is Actuarial Resources Corporation or ARC.

ARCBASE is a SQL Server insurance policy history and transaction database.

As stated previously, representing data of the highest quality was extremely important as the transformation moved toward the goal of developing a content rich data repository. The ARCVAl system with ARCBASE has been the vehicle to achieve this goal.

Further, the requirement to establish a data environment that would accommodate change as the business evolved was absolutely critical. At the time, mainframes dominated the landscape with their rigid data storage characteristics. While available, the mainframe data management systems required considerable technical expertise to establish and utilize. Additionally, these systems did not offer facilities for end users to easily access and utilize data.

As noted throughout this paper, the ability to access data across the entire administrative ecosystem, subsequently represented as high-quality data in the actuarial book of record, and analyze the data at considerable greater depth is helping business units across Western & Southern fulfill their analytical and information reporting requirements.

The scope and depth of the data available within the actuarial book of record (ARCBASE) has continued to be enhanced year after year as the transformation has advanced. The data content has been extended and incorporates elements well beyond the traditional actuarial types of data.

The data environment that has been established is providing a basis to thoroughly analyze and explain, in a matter of four or five business days, what has happened during a particular timeframe, be it a month, a quarter, etc.

Best-in-Class Actuarial Technology Tools

Establishing a set of best-in-class actuarial technology tools, in concert with the actuarial database of high-quality data extracted from the array of different administrative, financial

and surrounding systems, has been key to expeditiously conducting analyses required across all the operating companies and for the enterprise.

Many of the efficiencies gained during the initial transformation activities and those continuing to be gained are directly aligned with deploying best-in-case actuarial tools. Realigning and/or replacing some actuarial tools in concert with the actuarial book of record database has reduced the preparation time needed to conduct analyses. The result has been to make the analysis available much sooner and allow more time to analyze the outcome.

Collaboration

A key element of the longer view was to enhance the collaborative working relationship among the Western & Southern business units directly served by the actuarial group, as well as those the actuarial group must depend on, such as the information technology organization.

Enhancing the collaborative relationships has been and continues to be central to achieving many of the benefits being experienced.

As would be expected, establishing a collaborative culture did not develop overnight. Understanding the expectations of the business units being served was central to developing a collaborative culture.

A number of practices at Western & Southern contribute to developing the necessary understanding of the business unit and actuarial practices. In point of fact, the practices have produced an exceptionally deep mutual understanding on the part of the management and staff among the business units and the actuarial group.

Rotation of Staff - Among these practices is the rotation of actuarial management and staff across various Western & Southern business units. The practice of rotation is a formal program representing an element of an individual's professional career development plan. This practice is regularly acknowledged as the rotated actuary gaining insight from the business unit perspective into how the actuarial group may extend services to a particular business unit.

Information Technology Organization Collaboration - During the initial stage of the transformation, it was recognized that collaboration with the information technology organization was critical. Some early experiences, most notably too many information technology staff engaged in the process, led to the assignment of one information technology team to the transformation effort.

This proved to be extremely instrumental in the exceptional level of collaboration that has been experienced among the information technology and actuarial groups.

The Actuarial Data Book of Record - The contribution of the actuarial book of record database (ARCBASE) to collaboration has evolved over time, primarily the product of the file being “the most accurate, highly reliable source” for data to conduct analyses of all types. The recognized quality of data available from the database and various forms of analyses produced have created an environment where highly interactive exchanges of ideas occur, leading to identifying and serving the information needs among the business units.

Standardization of Practices and Processes - Yet another contributor to enhancing collaboration has been the standardization of practices and processes. In this case, activities and responsibilities are extremely well-defined, including the expected deliverables. The collaboration is represented by gaining considerable efficiencies and effectiveness during the course of completing various activities as well as enhancing the quality of the work product.

Service and Technology Provider Relationships - From the perspective of collaboration, last but not least, are the relationships established with service and technology solution providers. The actuarial group has developed and sustained excellent working relationships with the firms delivering technology application capabilities. A notable example of collaboration is the development and continued enhancement of the actuarial data book of record database.

The collaboration with ARC provided a basis to utilize an early version of ARCBASE, a database facility specifically designed to support actuarial requirements. ARC also provided subject matter expertise to initially configure ARCBASE to fulfill the Western & Southern requirements. The collaboration with ARC continued over time, leading to Western & Southern’s actuarial team participating in the continued enhancement and development of the ARCBASE facility.

Fact-Based Analyses

The environment established and continuously refined enables analyses to now be more fact based (data) rather than being based on assumptions or estimates. The fact-based information provides for better overall decision making and financial management of the business.

The combination of the collaboration, actuarial tool set and the actuarial book of record are contributing to substantially more comprehensive experience studies.

Experience studies frequently drill at greater depth because of the extensive amount of available data. The efficiencies made available when conducting experience studies provide for more iterations to be run, creating different perspectives of the analysis.

As the transformation has progressed, more and more diverse types of analyses are being completed among the actuarial staff as well as the business unit management and staff. Many of these analyses go beyond the traditional types of analyses completed by actuarial groups.

Post-close business analysis on the part of the finance and accounting groups begins much sooner within the five-day closing process. Over time, as the transformation has progressed, fewer and fewer discrepancies have been found, reducing the time associated with reconciliation. The recovered time provides for more analysis to determine the factors contributing to outcomes.

The actuarial transformation was followed by similar transformation activities in accounting functions. The success of both transformations combined to allow the company to maintain approximately the same level of accounting staff, despite the fact that the number of companies being supported by that staff doubled from three to six.

The transformation contributions to forecasting activities are quite significant. Based on having timely access to highly reliable data from the actuarial group, the entire set of asset/liability management requirements has been improved, such as reasonability tests, cash flow modeling, economic capital calculations, interest rate risk, and liquidity risk.

The environment established during the transformation, and more specifically ARCBASE, has supported more comprehensive profitability analyses at a finer level within each book of business. The continued collaboration and refinement of ARCBASE in response to the dynamics of the business are facilitating the expanded scope and depth of the profitability analyses.

The risk management group was established by “slicing off a piece” of the actuarial group. This, plus the continued rotation of staff among to the two groups, is proving to be very beneficial. One of the team’s first assignments was to internally build an Enterprise Risk Management framework. The framework was started utilizing the Standard & Poor’s approach. The actuarial group participated in the initial development and subsequent refinement of the framework.

Fulfilling the entire ORSA requirements has been made easier through the valuation process and surrounding activities completed by the actuarial group.

The asset/liability management reporting system (ALMRS) was also developed internally. ALMRS supports preparing financial insights and the ability to prepare gradual views of the assets and liabilities. The system enables preparing comprehensive line of business reporting. The actuarial group is an active partner in all the asset/liability strategy and analysis.

The activities pursued and capabilities now available are significantly extending access to data and tools to conduct new forms of analyses to the business units.

Targeted profitability analysis has continually improved during the actuarial group transformation. Other areas where continuous improvement has been experienced are associated with cash flow modeling, liquidity analyses and all forms of stress testing.

As the transformation progressed, the corporate planning and actuarial groups began to work more closely together, collaborating to leverage the advancements made in terms of accessing and more fully utilizing data. An example of this collaboration is to better understand the net income projections across the various product lines.

Acquisitions

Western & Southern has acquired several insurance companies and expanded several lines of business during the time of the transformation. Each acquisition introduced different policy administration, distribution management and financial (general ledger) systems; technology platform; and associated data structures, etc.

An element of Western & Southern acquisition strategy has been to introduce additional categories of products to its offerings. During the transformation, several of the acquisitions fulfilled this objective.

With few exceptions, the integration of new categories of products associated with acquisitions were assimilated without difficulty. Much of the ease of assimilation into the actuarial group is attributable to the long-view taken as the transformation moved forward. The establishment of the ARCBASE resource, in concert with the data extract-related operating procedures and controls within the information technology group, facilitated supporting the acquired administrative systems.

Standardization of Descriptions

Standardization was introduced across the acquired company's financial systems to create a common description for the elements comprising the general ledger and other associated finance and accounting systems. The product of this standardization has been to enable analysis, reporting and measurement of results on a consistent, comparable basis.

The introduction of the standard chart of accounts enables all forms of analysis and reporting to be simplified, consistent and expedited across all six companies as well as corporate. This standardization is represented in the actuarial database, which is a significant contributor to the wide spread reliance on this resource.

During the transformation, primarily the product of additional acquisitions, a decision to further extend the standardization of descriptions led to establishing a common naming convention for the data elements across the administrative systems.

The standard is facilitating more accurate analysis of information (data) across multiple administrative, financial, and surrounding systems comprising the ecosystem. This is helping reduce the effort required to prepare data extracts and the subsequent transfer and load into the actuarial database (ARCBASE). The standard has been introduced throughout the ARCBASE data and is contributing to the increased use of ARCBASE.

Predictive Analytics

As previously stated, the scope and depth of analyses being completed has expanded year after year as the transformation plan and activities progresses. The success with utilizing the actuarial data and the more comprehensive analyses of prior as well as current events, including future trends, has created the opportunity to conduct more extensive predictive analyses.

Predictive analytics is viewed as the logical progression for the transformation, more accurately described as the movement to establishing a leading position in terms of advanced analytics.

Predictive analytics is viewed as the logical progression for the transformation.

There are high expectations and the initiative to expand the use of analytics will further contribute to improving the management of the business. The expectation is that analytics will contribute to improving forecasting, identifying potential risk exposures, better lapse management, supporting underwriting including auto-underwriting, etc.

To this end, a Center of Excellence for Analytics has been established at Western & Southern to advance all forms of analytics and, specifically, to continue to expand predictive analytics. For the foreseeable future, the center will be incorporated into the actuarial group charter. The center will function as a common service supporting the needs of all the business units. One of the actuarial group managers is assuming responsibility for the center.

At present, the planned predictive analytics will be leveraging the actuarial book of record due to the richness and reliability established. As in the past, collaboration is anticipated to be a key factor as predictive analytics are further introduced across the Western & Southern enterprise. The COE for Analytics, being a service function, will reach out to the various business units to engage and define potential predictive analytics topics. The expectation is that the knowledge gained as more comprehensive experience analyses are undertaken will prove beneficial when formulating models to conduct predictive analysis studies.

The Actuarial Group

Over time, the incremental actuarial staffing associated with an acquisition has been typically in the low single digits. The general practice is to manage the assignment and/or attrition of the actuaries associated with the acquired company over 12 to 18 months.

The Information Technology Group

Often, within insurance companies the actuarial department can function as a shadow to the information technology organization. These shadow relationships frequently introduce complexities associated with the reliability of data extracts and the use of similar data by other business units.

This information technology and actuarial partnership is contributing to leveraging the competencies and assets within both organizations.

Because of the collaboration at Western & Southern, the actuarial and information technology groups have established an extremely strong partnership.

Much of the success of the relationship is attributable to the knowledge developed of each respective organization. This attribute of the relationship is largely the product of two initiatives: establishing common goals, including responsibilities, and assigning specific individuals within each group to address and coordinate fulfilling the actuarial needs. There have been times when the relationship has been strained, however, in short order, the cause was identified and rectified.

Initially individuals were assigned to support the deployment of ARCBASE. Each individual allocated some portion of time to supporting deployment of the ARCBASE capability. There was a learning curve extending over several months on the part of the actuarial, information technology and ARC team members.

Through the learning curve, it was recognized that understanding the full implications of deploying an ARCBASE-like facility required developing specialized knowledge of the actuarial function by the information technology organization. The knowledge required relates to the variety of data required to fulfill actuarial analytical requirements. An information technology staff member was assigned to work directly with the actuarial group. In a relatively short timeframe the position became full time.

The information technology actuarial specialist engaged with the actuarial group, contributing to determining approaches to fulfilling requirements, outlining what data sources were necessary and how the data could be accessed across the technology ecosystem, comprised ultimately of fifteen administrative systems.

As the working relationship developed, the specialist established practices and procedures to coordinate the extraction-transfer-loading (ETL) of data across the administrative

application systems. An important component of the practices and procedures was and continues to be establishing methods to check and validate the accuracy of the extracted data.

These practices and procedures have proven to be extremely valuable in helping to ensure the data loaded into the actuarial database is of the highest quality. Over time, the proven high quality of the data contained in the actuarial database (ARCBASE) has contributed to the increased use of this source of information across many Western & Southern business units.

As use of the actuarial data continued to increase, new forms of analysis emerged. Frequently, these new analyses incorporated the need for additional data to be extracted from the various administrative systems and loaded into ARCBASE. As these needs continued to expand, the tasks associated with assembling the required data were further refined.

Significant investments are continuing to be made in new technologies to improve systems, increase efficiencies and to expand the capacity to grow.

Data Management Competencies

An extremely valuable outcome emanating from the collaboration among the actuarial team, ARC technologists and the information technology group has been the development of knowledge relating to data management. The knowledge gained has not been from the perspective of the highly technical aspects or internal aspects of data management, but rather toward:

- Data-related requirements when considering potential business needs.
- Data implications associated with the analyses that are or may be sought.
- Near and longer-term types of data that may be required.
- Structure or scheme best suited to serve the needs of the users.
- Better defining data to be extracted from across the technology ecosystem.

This knowledge has been gained over a number of years in an iterative fashion. As the knowledge has been gained, the scope as well as depth of different forms of analyses have been extended. For example, as the analyses have been extended, more definitive answers have been given to the cause of a variance in terms of planned versus actual outcomes.

The development of the data competencies has contributed to the continuous expansion of the data within actuarial book of record which enables better serving all of the constituencies utilizing this asset.

The contributions of collaboration in concert with the development of data management competencies were further extended within the actuarial group, enabling the development of more comprehensive (sophisticated) models. In this case, the actuarial and the ARC teams working together experienced new ways to leverage the ARCBASE resource. More extensive use of the data is taking place in conjunction with the development of new forms of modeling.

Confidence and Trust

An extremely high level of confidence and trust is present among the management and staff across the business units served by the actuarial group. Cultivated over time, confidence and trust are largely the product of five factors:

- Proactive, collaborative engagement of the actuaries.
- Increased accuracy of information and/or data being delivered.
- Ability to efficiently prepare insightful information.
- Ability to rapidly respond to change.
- Deeper knowledge of the business among the actuaries.

An outcome associated with the development of confidence and trust is that expectations are driven higher. In this case, ideas and questions arise relating to how incremental analyses may be undertaken to further enhance understanding where the conduct of the business might be improved. While the activities pursued during the transformation are collectively helping to achieve Western & Southern's strategic objectives, the culture of continuous improvement means the actuarial group is continually monitoring these objectives and, when applicable, refining planned transformation activities to ensure alignment with these objectives, further building confidence and trust in the actuarial group.

About ARC

Actuarial Resources Corporation (ARC) is an industry-leading provider of actuarial software and consulting services operating out of Overland Park, Kansas, a suburb of Kansas City. ARC develops and maintains the ARCVAl system, a comprehensive financial analysis system. Visit ARC at www.arcval.com.