

Operational excellence and process optimisation techniques: Case Studies

Introduction

In the changing landscape of the insurance industry, continually improving processes is critical to staying competitive and reducing operational risks. The industry is at a pivotal crossroads, dealing with significant changes brought about by a high inflation environment and the complexities of new regulations like IFRS 17 and updates to the Solvency II framework. Managing these complexities requires a careful balance of compliance and operational efficiency.

While the industry has undergone substantial transformations due to these external pressures, the difficulties of the moment have highlighted the important role that process improvements play in managing an insurer's expense base. Combining these new regulatory requirements and ongoing technological advancements allows insurance companies to meet compliance standards and strengthen operations against future disruptions.

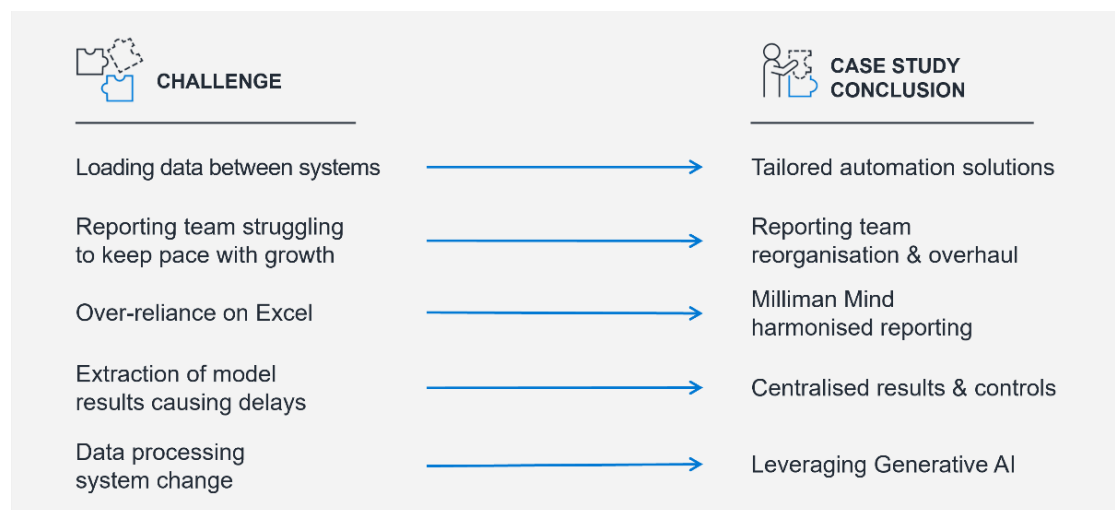
In our recently published briefing note, "[Process improvements & efficiencies: Getting more with less](#)" we discussed the benefits of undertaking process improvements and steps to follow when doing so. We also discussed in length the various types of activity that can be undertaken to improve processes. The wide array of options ranges from innovative new solutions and coding to more traditional solutions with the application of common sense and experience to unclog blockages in your processes.

This follow-up briefing note provides case studies which show examples of some of these techniques that have been used to improve our client's processes. Each case study explores industry challenges, strategic solutions used and benefits gained. They cover topics from using Milliman Mind-powered data validation to leveraging generative artificial intelligence (AI) for process improvements. These case studies provide valuable insights into process optimisation within actuarial and risk functions. The main aim is to provide practical lessons to guide and inspire similar changes across the insurance sector.

Overview of case studies

This section presents a series of case studies that demonstrate process improvements in the Irish insurance industry. Each case study provides a firsthand account of the challenges faced, the strategies used and the resulting improvements.

FIGURE 1: OVERVIEW OF FIVE CASE STUDIES, CHALLENGES AND SOLUTIONS



TAILORED AUTOMATION SOLUTIONS

In process improvement, there's no one-size-fits-all solution. Each company needs a custom approach designed to address its specific challenges and opportunities. This case study explores a success story achieved through careful tool selection, highlighting the need to understand overall automation requirements before implementing specific solutions.

In this case study a client asked us to help them automate their inefficient processes. After analysing the problem, we proposed Power Query as a useful tool for their needs. We then re-ordered and re-engineered some of their processes to deliver a much quicker and more robust process that the client is comfortably running in-house now.

REPORTING FUNCTION REORGANISATION AND OVERHAUL

Our initial focus was to restore senior management's confidence in an under-developed process and a reporting team that was under significant pressure. The team was grappling with serious quality issues, high staff turnover and processes that were not fit for purpose. We helped the team take a step back and reorganise both the team structure and processes to help address these quality issues. This project involved using our knowledge and experience of what good processes look like and our ability to work with several stakeholders to successfully tackle the problems within the team to deliver a revised process that was documented and had key controls in place which could produce correct results on time.

MILLIMAN MIND: HARMONISED REPORTING

This case study explores how we helped clients streamline and simplify all their existing Excel processes into a single solution. It also showcases the power and versatility of Milliman Mind to perform steps from data validation at the beginning of the process to regulatory returns at the end of the process and everything in between. The results include improved operational efficiency, enhanced security and strengthened auditability.

CENTRALISED RESULTS AND CONTROLS

In addressing challenges associated with limited licences for the actuarial modelling system, this case study outlines a strategic intervention which significantly improved operational efficiency and cost-effectiveness within the actuarial functions. This is an example of common-sense consulting rather than the need for new technologies.

LEVERAGING GENERATIVE AI

This case study describes how a company overcame operational challenges linked to a manual and time-consuming data transformation process. It outlines the company's journey towards improved efficiency by using AI-driven automation. The case study details the transition from traditional manual processes to an automated solution, taking advantage of the capabilities of Milliman's in-house version of ChatGPT without delving into the technical specifics of SQL operations or Python.

As we go through these case studies, we aim to highlight the successes and lessons learned and provide practical strategies for insurance companies in Ireland. These real-world examples can guide industry professionals towards making informed and strategic process improvements which are specific to the challenges and opportunities in the insurance sector.

Case study 1: Tailored automation solutions

CHALLENGE:

Faced with automating the actuarial processes of a large cross-border company selling into several European territories with complex business processes, we encountered the challenge of selecting the most suitable tool to automate the Extract, Transform, Load (ETL) operations between the actuarial models and IFRS 17 reporting system and introduce an end-user computing (EUC) framework to reduce operational risk. A strategic approach was adopted to ensure optimal outcomes by recognising the diversity of the company's processes and the need for a bespoke solution.

SOLUTION:

Rather than hastily diving into automation, the team undertook a top-down view, receiving the problem from upper management. This initiated a comprehensive process which involved engaging with end users across various departments to understand their unique challenges and pain points and choose the optimal solution.

KEY STEPS TAKEN:

1. **Taking a top-down view:** The automation project began with a directive from senior management, offering a top-down perspective on the overarching problem. This approach set the stage for a holistic understanding of the automation requirements across the organisation.
2. **Gaining bottom-up understanding:** We engaged with end users at every level, examining their processes, challenges and issues. We gained in-depth insights into the intricacies of daily operations, providing a granular understanding of user needs and pain points.
3. **Proposing a solution:** Based on the insights gathered, Power Query and a robust EUC framework were proposed as potential solutions to streamline processes. The time invested in obtaining both top-down and bottom-up views ensured the proposed solution aligned with the identified needs of the end user.
4. **Collaborating with upper management:** Upper management within the local entity was consulted to evaluate the suitability of Power Query with the IT roadmap set out by the Group's IT function. The Group's IT function confirmed that Power Query was the ideal solution.
5. **Future-proofing:** Power Query aligned seamlessly with the organisation's IT roadmap for the future, especially concerning migrating the Group IFRS 17 process to Power BI in its medium-term strategy (queries can be easily migrated across in the future). This strategic alignment facilitated future integrations and testing in the Power BI cloud as it became available.
6. **Project management:** Robust planning, effective communication and meticulous project management ensured a smooth implementation. The process was streamlined, avoiding wasted effort and producing optimal outcomes for the local entity and its parent group's transformation roadmap.
7. **Automation and training:** We quickly automated the identified processes, completed user acceptance testing and conducted comprehensive training sessions for the company staff. This empowered staff to become self-sufficient in utilising and improving Power Query tools, fostering a culture of continuous improvement.

OUTCOMES:

1. **Operational efficiency:** The transition to Power Query resulted in streamlined processes, enhancing overall operational efficiency.

For those not familiar with Power Query, it allows the user to streamline and automate their data preparation processes, freeing up more time for analysis and strategic decision-making. You can record yourself doing the data processing, and Power Query will convert these steps to formulae for you which can be easily re-run in the future, with a clear step-by-step audit trail.
2. **Cost savings:** Efficient automation contributed to cost savings by reducing manual effort and minimising errors. Following the go-live of the new process, the team was able to remove one full-time contractor from the expense budget, not to mention the wider synergies and time savings for other team members.
3. **Seamless integration:** Power Query seamlessly integrated with the organisation's IT roadmap, ensuring compatibility and future-proofing.
4. **Empowered workforce:** Comprehensive training and user acceptance testing empowered the workforce to become self-sufficient in utilising and improving Power Query tools. There can sometimes be apprehension that new tools will be hard to operate once the designers step away—we made sure this was not the case. Power Query is a very accessible platform with minimal training required.
5. **Solvency II synergy:** The project's success has prompted the client to consider rolling out similar enhancements to the Solvency II (SII) BAU and ORSA processes, highlighting the transformative impact and scalability of the tailored solution.

CONCLUSION:

This case study underscores the importance of understanding top-down automation needs before initiating bottom-up solutions. The deliberate engagement process with end users considered tool selection, and strategic alignment with the organisation's roadmap resulted in a successful automation project. The approach showcased the value of planning, communication and project management in achieving the best outcomes for the local entity and the broader transformation goals of the parent group. The success story is a testament to the significance of tailored solutions and thoughtful consideration in process improvement projects, culminating in an empowered and self-sufficient workforce.

Case study 2: Reporting team reorganisation and overhaul

CHALLENGE:

The reporting team struggled to meet regulatory submission deadlines and had experienced significant errors in the past, which required restatements. Senior management didn't have confidence in the figures produced, and morale within the reporting team was extremely low. Turnover had become a problem which exacerbated existing problems due to loss of knowledge without proper documentation.

SOLUTION:

Given the many problems, the team needed to be re-organised and rebooted. New practices and cultures had to be learned, and the processes for reporting had to be critically analysed and improved to include key controls. At this stage, the solution wasn't about a new model build or automation—the processes needed to be stabilised first.

KEY STEPS TAKEN:

1. **Team restructuring:** This project began with assessing the team's skills and mix of contractors and consultants/contractors and creating a long-term vision for what the team will look like. We re-aligned the team into smaller sub-teams which focus on specific tasks in the reporting cycle, where existing employees can learn and take responsibility and junior hires can replace expensive contractors.
2. **Key controls:** We built set of key controls to tackle the quality issues in the process. This included practical items like reconciliations across reporting bases, sense checks, the four-eyes principle on all calculations, sign-off of all stages, analysis of change processes, sensitivity testing and much more. The confidence in the figures increased over time as each of these controls was rolled out. Tolerances were set to describe what was a pass or a fail for a control.
3. **Practical team and project management processes:** The foundations to manage the team and workflows efficiently were laid with capacity and workload planners for the team, resourcing and request management calls with other stakeholders and post-quarter end lessons learned sessions. By managing other requests that had to be dealt with, the team was able to dedicate more focus during the quarter end to its primary task: getting accurate results produced within the agreed timelines. This had not been the case in the past.
4. **Timetable:** We worked with the broader reporting team and various local entities to agree on a realistic new Group timetable. Some items in the timetable were agreed upon later than previously, but this was based on the reality of when items could be delivered, rather than previous aspirational dates which were always missed and caused downstream issues. Some inputs in the timetable were investigated to seek earlier delivery and allow calculations to begin earlier. The order of tasks was re-imagined within the team to allow for proper sequencing and focus on critical tasks earlier in the process. Internal deadlines within the team were created to ensure responsibility and clarity on delivery between the sub-teams. Review meetings with key stakeholders were scheduled as part of the timetable.
5. **Delivery of results:** The output and presentation of results was overhauled to create different levels of detail for various stakeholders. This allowed the Chief Actuary to delve into more detail and have separate review sessions with the reporting team before a more comprehensive review session with the C-suite focused on other broader aspects of the quarterly results. The management and audit packs were updated to include clearer graphics and more insightful commentary, as well as clear documentation of controls passed (or failed) and limitations of the process.
6. **Documentation:** A project was undertaken between quarters to map and document all key processes (including risks and controls). The team invested in this process as it was seen as essential to capture knowledge within the team and allow for efficient and safe handovers in the future.

OUTCOMES:

The overhaul proved to be hugely successful across several fronts:

1. **Process stabilised:** The process was stabilised, and now the team has a clear set of steps to follow each quarter to produce results. The steps were documented, as were the sign-offs. This significantly reduced the operational risk involved.
2. **Accurate results:** The stability in the process, broader culture of reviewing figures and the key controls implemented meant the accuracy of results improved, and errors were caught earlier in the process and learned from. This meant the figures submitted were accurate, and senior stakeholders had increased confidence in the figures—the team's achievements were recognised throughout the Company and at the Audit Committee level.
3. **Regulatory deadlines met:** Given that the team was putting more focus on quarterly figures, timetables were clearer, and there was less need for re-runs. The team was able to submit results on time consistently.

4. **Increase in staff satisfaction:** Staff satisfaction increased dramatically due to recognition of the team's efforts, investment in the team's skills, clear career paths and responsibilities, and a calmer working environment. As the process stabilised and ran to a more organised timetable, the team's working hours also normalised with proper work-life balance.
5. **Removal of several consultants and contractors:** The processes became more efficient, and knowledge transfer was undertaken. This allowed the company to gradually reduce the head count of the team and reap significant cost savings, as it worked towards the long-term vision for the team (which has now been achieved).

CONCLUSION:

This case study shows that the simplest fixes can sometimes be the most impactful. The needs of this company meant that common sense, laying a good foundation and building controls delivered significant gains for the company—without the need for coding or building new models.

Our knowledge of what a good process looks like and what changes will have the most significant impact helped accelerate the team from a state of crisis to one where the achievements were applauded. Our ability to give an independent view and speak with authority on the topic helped manage delicate relations with other stakeholders. As a result of the overhaul, the team headcount has been reduced significantly, saving substantial sums. Still, separate from this, the quality and timeliness of reporting activities improved to the required level.

Case study 3: Milliman Mind: Harmonised reporting

CHALLENGE:

Our client's operating model overview presented significant challenges. The client relied heavily on Excel for tasks at every step of the actuarial reporting process, from validating incoming data extracts to outputting the required regulatory return templates. This led to:

- A lack of model governance.
- High operational risk.
- A manual and inefficient actuarial workflow.

The existing operating model struggled with scaling and keeping pace with the growth of the new business portfolio.

SOLUTION:

To address these challenges, we implemented a no-code End-to-End solution using [Milliman Mind](#). This cloud-based platform allows for cross-collaboration and ensures models are 'locked' once uploaded to avoid unwanted changes during production. The solution also automated the actuarial workflow and secured links between files. It showcased the power and versatility of Milliman Mind to perform activities from data validation at the beginning of the process to regulatory returns at the end of the process and everything in between, including:

- **Actuarial ETL¹:** transforming raw data extracts to model point files (MPF).
- **Actuarial Modelling:** by calculating results across the following bases:
 - Solvency II (TPs, SCR & ORSA)
 - Local and Group IFRS Accounting, both reporting and Financial Planning and Analysis (FP&A.)
 - Internal Capital & Risk Management calculations.
- **Actuarial Analysis:** by performing all AOC analysis using a single model.
- **Regulatory Returns:** by populating the required templates.

¹ Actuarial Extract, Transform, Load (ETL).

KEY STEPS TAKEN:

1. **Gain Deep Understanding:** Our Milliman consultants deeply understood the client's needs before beginning the migration.
2. **Convert Models:** We simplified the existing models for a smooth transition.
3. **Test Models:** We defined the number of quarters for testing, set an acceptable variance level, and optimised the models.
4. **Move Models to Production:** After a thorough post-valuation review, the models were moved to production.

OUTCOMES:

Benefits for the Actuarial Team:

1. More time spent validating and understanding results rather than on model validation.
2. Reduced risk of human/calculation error.
3. Replacement of multiple tools with one system.
4. Ability to run the entire valuation process for multiple reporting bases simultaneously.

Benefits for Management:

1. Better value for money.
2. Faster reporting timelines.
3. More accurate results.
4. Reduced risk of errors, due to a controlled framework for developments, inputs, runs and extracting output.
5. The solution is intrinsically linked with Excel – it is Excel files and models that are fed into Milliman Mind for conversion to Mind models, and these Excel model can still be kept or downloaded if management want to review or understand the model and process.
6. Complete audit trail of changes made in a robust system.

CONCLUSION:

This case study highlights the automation potential of migrating to Milliman Mind. The benefits realised by the client demonstrate the value of this approach.

The parent company has planned to move more entities within the group to this integrated Milliman Mind solution. This case study underscores the importance of embracing innovative solutions which can be scaled across larger organisations.

Case study 4: Centralised results and controls

CHALLENGE:

The actuarial team heavily relied on the actuarial modelling system's Excel add-in for individual spreadsheet calculations. However licences for this Excel add-in were expensive, so a limit had been placed on how many the company wanted to purchase. This led to bottlenecks in the reporting process due to the restricted number of available licences. This limitation hindered all downstream parts of the process, leading to delays and inefficiencies in the actuarial workflow.

SOLUTION:

To overcome the licencing constraints, we proposed re-organising and streamlining the process. All actuarial modelling system results required by actuaries were centralised into a single master Excel spreadsheet. This consolidated repository allowed for the efficient management of calculations, controls and downstream mappings in a centralised manner.

KEY STEPS TAKEN:

1. **Centralised data repository:** Aggregating all actuarial modelling system results into a single, comprehensive spreadsheet created a centralised hub for actuarial calculations.
2. **Built-in controls:** Robust controls were integrated into the centralised spreadsheet to ensure data accuracy, consistency and reliability, mitigating the risk of errors in downstream processes.
3. **Downstream mapping optimisation:** Streamlined mappings were established to facilitate seamless integration with downstream processes, reducing complexities and enhancing overall data flow.
4. **Licence optimisation:** The need for individual licences for end users of the model result was significantly reduced by centralising calculations. Instead of the previous requirement of 10 licences, only two licences were necessary to manage the consolidated spreadsheet effectively.

OUTCOMES:

The implementation of this centralised approach yielded several positive outcomes:

1. **Increased operational efficiency:** Actuaries experienced a streamlined workflow which could process calculations simultaneously, eliminating the previous bottlenecks.
2. **Cost savings:** The reduction in the number of required licenses resulted in substantial cost savings. The reduction in the number of licenses saved €160k per annum; over a three-year life cycle, this equates to a saving of €0.5m and contributed directly to the organisation's bottom line.
3. **Enhanced data quality:** The built-in controls and centralised repository ensured data accuracy and consistency, mitigating the risk of errors in downstream processes.
4. **Improved resource utilisation:** Actuaries could allocate their time more efficiently, focusing on analytical tasks rather than contending with licensing constraints.

CONCLUSION:

This case study exemplifies the transformative impact of centralising actuarial modelling system results, optimising downstream processes and strategically managing licences. The resulting cost savings improved operational efficiency, and enhanced data quality underscores the value of improving the actuarial operating model.

This case study illustrates that there often isn't a need for new technology or radical thinking—sometimes an independent perspective and some knowledge of what has worked in other situations can spot a simple, common sense fix which can deliver big savings. This project paid for itself several times over based on the licence cost savings alone, not to mention the efficiencies gained in running this process and for all users involved.

Case study 5: Leveraging generative AI

CHALLENGE:

The existing data transformation process for actuarial data was cumbersome and archaic. It was powered by software which is dying out, leading to inefficiencies and time constraints within the data management workflow.

SOLUTION:

Recognising the limitations of the manual approach, the solution involved embracing Python automation, facilitated by ChatGPT's assistance at key stages of the build.

KEY STEPS TAKEN:

1. **GPT assistance for exporting SQL:** ChatGPT was enlisted to generate a macro for exporting SQL statements from the Access database, laying the foundation for automation.
2. **VBA execution in Access:** The generated VBA code was executed within the Access database, automating the extraction of SQL statements and mitigating manual efforts.
3. **GPT assistance for Python conversion:** ChatGPT was pivotal in converting the exported SQL to Python, providing code and detailed documentation for a seamless transition.
4. **Python implementation and testing:** The Python code, generated with ChatGPT's assistance, was executed to validate its ability to replicate the output from the Access database, ensuring accuracy.
5. **Testing the output:** The Python-generated output underwent rigorous testing in Excel and other tools, validating its consistency with the Access database output and ensuring data integrity.

OUTCOMES:

1. **Efficiency gains:** The transition to Python automation significantly reduced the time and effort required for SQL operations, fostering operational efficiency.
2. **Error reduction:** Automation minimised the potential for human errors in SQL extraction and Python conversion, enhancing overall data accuracy.
3. **Scalability:** The Python solution offered scalability, accommodating future expansion and additional functionalities within the data management system.
4. **Knowledge transfer:** The case study highlights the role of ChatGPT in facilitating knowledge transfer, enabling a smooth transition from VBA to Python scripting.

CONCLUSION:

This case study underscores the usefulness of generative AI for data migrations—the transformative potential of leveraging AI technologies to quickly translate archaic actuarial processes from old platforms to modern solutions.

General insights and conclusions

The case studies shared in this briefing note emphasise the potential of custom automation solutions, strategic planning and cutting-edge technologies to bring about significant improvements. They underline the necessity of comprehending each organisation's distinct needs and challenges before introducing solutions.

From utilising generative AI to refining actuarial processes, these case studies illustrate how Milliman's solutions can boost operational efficiency, cut costs and limit errors. They also accentuate the significance of futureproofing and scalability, ensuring solutions can evolve and expand with the organisation.

Contact us today to learn more about how we can help you transform your organisation's processes and operations. We look forward to working with you to achieve your goals.



Milliman is among the world's largest providers of actuarial, risk management, and technology solutions. Our consulting and advanced analytics capabilities encompass healthcare, property & casualty insurance, life insurance and financial services, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

milliman.com

CONTACT

Patrick Meghen
patrick.meghen@milliman.com

Alan McDonagh
alan.mcdonagh@milliman.com