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The not-so-happy path for insurers

One of the challenges for South African insurers is the difficulty in improving business performance due to a disconnect between operational processes and technological capabilities. Often, the way internal processes run in the live business environment is quite different from how they were designed or how management believes they operate.

In recent years, significant investments have been made by insurers in technology and people, particularly in respect of *IFRS 17 Insurance Contracts* (IFRS 17) implementations, cloud infrastructure, data warehousing and cybersecurity management and controls. However, investment in core business process optimisation has lagged. With many large-scale transformational projects now complete or nearing completion, the remaining process gaps and inefficiencies are glaring, with many insurers continuing to experience process bottlenecks and implementing manual workarounds, resulting in mounting frustrations and declining intra-organisational trust. It remains a difficult climb, as the feedback from our South African actuarial transformation survey referenced in this survey confirms.

Insurance executives rightly describe their digital transformation journeys as landing on a "not-so-happy path", after all the efforts made in other areas of technology to-date. This begs the question - how does one modernise insurance processes, particularly finance and actuarial processes, whilst also ensuring that key stakeholder pain points are effectively addressed?

Understanding the pain

Before addressing process challenges in finance and actuarial transformations, it is essential for stakeholders to understand the type of processes that are involved in the problem statement.

Think about automating processes in operational areas of the business. Despite the inherent complexities prevalent in actuarial underwriting, onboarding customers during the sales process, providing policy quotations, or performing predictive modelling for lapses and retention, these non-finance processes typically deal with high volumes of transactional data which is accompanied by metadata[1], often making these processes easier to automate.

However, finance processes are different in nature. These processes are generally characterised by more aggregated and summarised data that require grouping, transformation or modelling of a particular formula, and often require period-on period comparisons across a number of different metrics. Finance user needs are cyclical, with different groups of users having different needs at different points in time, and each step requiring a different level of intervention.

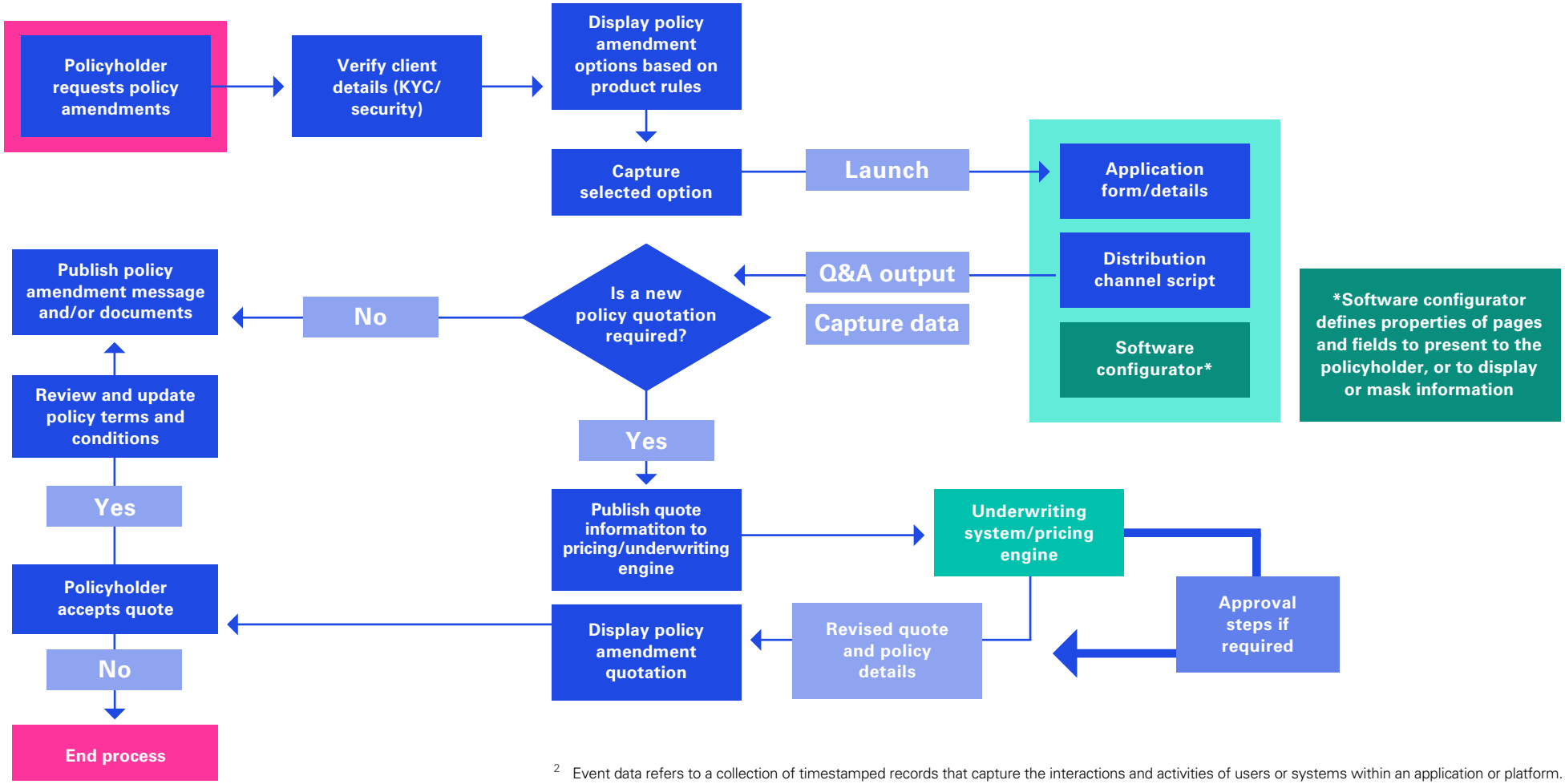
Let us refer to finance process needs as "management information" or "analytical data", to create the distinction from transactional data. While finance processes are built on transactional data as a key input (e.g. premiums, claims and expenditures), the challenge lies in automating the processes and models that generate management information, i.e. the tasks that transform transactional data into aggregated analytical data.

[1] Data that provides information to describe and explain other data e.g. timestamps (https://dataedo.com/kb/data-glossary/what-is-metadata)

Which process map?

When dealing with high transaction volumes and large amounts of data, finding an optimal "happy path" is easier. The process usually starts with extracting case-centric event data[2], which is stored in event logs[3]. This step involves describing the sequence of events, also known as a case, from beginning to end. The information of the case is captured in logs that typically include three key attributes: a case ID (identifying the case), an activity (description of the event in the process), and a timestamp (when the event occurred).

Diagram 1: Example of a policy amendment case and its events



[2] Event data refers to a collection of timestamped records that capture the interactions and activities of users or systems within an application or platform. Event data is typically stored in a structured format, making it easier to analyse and derive insights from. (https://www.dremio.com/wiki/event-data/). See also https://www.celonis.com/blog/what-is-object-centric-process-mining-ocpm/

[3] An event log is a chronologically ordered record of events occurring within a system or process, often used for troubleshooting and analysis purposes. (https://sematext.com/glossary/event-log/)

A business analyst can use this event data to understand the extent of efficiency within an insurer's processes. By analysing the most frequent starting and ending activities, as well as the connecting activities in between, one is able to gain full transparency into the workflows. This allows one to identify common problems and hidden opportunities to remove inefficiencies.

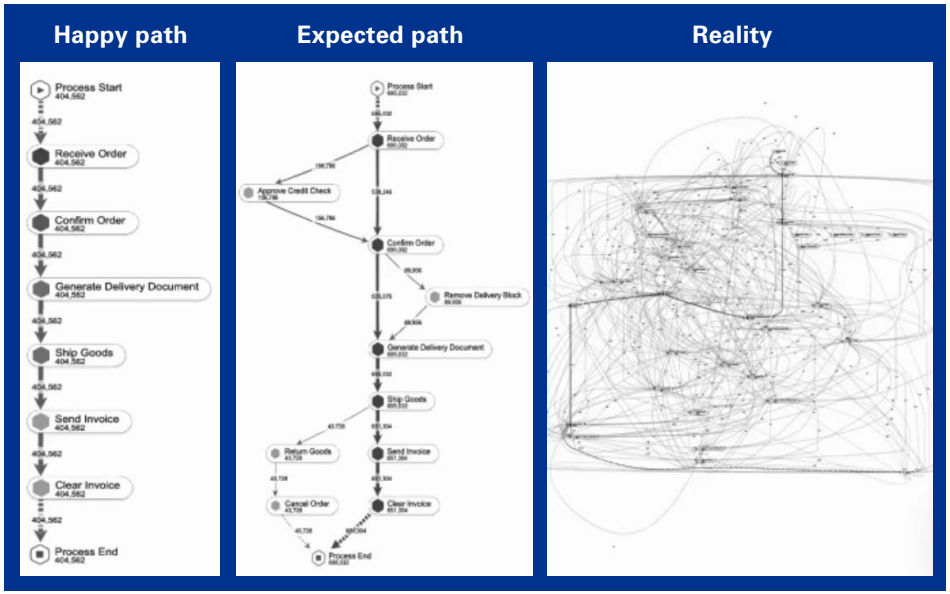
In such high transactional data scenarios, making tooling decisions is also simpler. There are excellent process mining and engineering software tools available that reduce the effort required to modernise processes. These tools help insurers transition from having a static, two-dimensional view of processes to dynamic, three-dimensional views. This is where the value lies, in being able to obtain insights to identify areas of opportunity and remediation to ultimately implement robust process optimisation initiatives.

However, certain traditional process mining techniques have limitations:

- data extraction and manipulation can remain a challenging and repetitive manual task for most insurers and can negate the efficiencies obtained through data transformation and analyses;
- 3D reality is squeezed into 2D event logs and models making it difficult to understand and visualise the true reality of the operationalisation of processes;
- interactions between cases and activities (i.e. how the sequence of events followed by a particular client or user influences another case) in a process are not always clearly defined or captured, which can take valuable time and effort to document in a manual fashion; and
- defining such relationships often require building a relational database[4], which is seldom catered for in traditional process mining techniques.

Object-centric process mining (OCPM) is a new approach that addresses the limitations of traditional case-centric process automation techniques. Tools that incorporate OCPM can help insurers better visualise and analyse the complexity and interconnectedness of modern business operations.

Diagram 2: Examples of organisational workflows



Source: https://www.celonis.com/blog/what-is-object-centric-process-mining-ocpm/

A detailed explanation of how these OCPM techniques work is out-of-scope for this article. For those that are interested in the topic, there are modern software tools available that leverage the use of object-centric event data (tracking events with its multiple cases) instead of case centric event data (following a single case path) that can help an insurer gain a clearer understanding of its processes, leading to more effective identification and resolution of operational inefficiencies.

So back to the difficult path for finance areas….

[4] A relational database (RDB) is a way of structuring information in tables, rows, and columns. An RDB has the ability to establish links or relationships between information by joining tables, which makes it easy to understand and gain insights about the relationship between various data points. (https://cloud.google.com/learn/what-is-a-relational-database).

A different journey

Unlike high transactional volume processes where deviations from standard processes are measurable, non-transactional processes (that may still involve high volumes of data, for example, actuarial liability calculations for financial reporting purposes) rely substantially on the involvement of people. Adding further to this complexity is the fact that these processes are characterised by intricate workflows across different systems, manual improvised activities and cross-dimensional collaboration between various teams. In this multifaceted environment, what is considered to be standard business process and a deviation from the norm is hard to agree on, as this is nuanced and tailored for each insurer's specific needs and the legacy systems and processes by which it is characterised.

The good news is that advances in process engineering can also be tailored for management information process needs to achieve operational excellence. This can be achieved in combination with other software tools.

The journey starts with similar principles. First, process mapping and analyses. This step is crucial and may require more effort for non-finance processes given all the manual steps and preferred ways different people in the value chain have set things up for themselves to cope with the challenge at hand. Assembling a cross-functional team to map out the entire process, including all steps, decision-making points and stakeholders involved is usually part of the recipe for success.

Next, is to identify bottlenecks and redundancies. This requires maturity from participants in the process as they look for areas where the process slows down or where there are unnecessary steps involved. Identifying opportunities for improvement is often easier to spot in "the other team", but the discipline required is to ask probing questions about your own processes that can ideally be sped up. Usually, some external party challenge is required to cause enough offence to start admitting there might be areas for improvement in your own team - not-so-happy finance colleagues challenging discomforted actuaries, and vice versa, should be seen as a necessary part of the journey that is being walked together.

Last is data analysis - to analyse the source data sets and ultimate post-transformation management information, and each step in the journey thereto. If you have not been able to identify trends and patterns, then you have not applied enough investigative time on your journeys. This helps in understanding where inefficiencies lie and how they can be addressed.

By following these steps, insurers can start optimising their non-transactional processes, leading to better operational efficiency and improved customer experiences. This readiness is what unlocks the transformational steps that can then be explored.

The happy-path

The common goal at hand is to focus on automating repetitive tasks wherever possible, and considering the right tooling for the particular problem. By implementing workflow automation options, insurers are able to optimise their processes, leading to better operational efficiencies.

Included below are some examples of best practice initiatives that insurers have applied to non-transactional finance processes:

- **Workflow tooling and robotic process automation**

  Robotic process automation (RPA) integrates technologies that recognise user interfaces with tools designed to execute workflows. By combining these technologies, RPA can automate repetitive tasks. This automation mimics human interactions with digital systems, making processes more efficient and reducing the need for manual intervention. These applications follow predetermined actions within specified applications, replicating and replacing human interactions required to complete business processes.

  These technologies assist in designing and developing automated processes and controls for better validation, simplified reporting and dynamic dashboards to track process efficiency. Workflow management tools help track task progress and ensure completion in a timely manner. It can also integrate with other systems to automate data exchange and eliminate manual handoffs. Even if the transaction volumes are low, RPA can significantly improve efficiency and reduce manual effort.

- **Insurance specific system-agnostic workflow and governance tools**

  Willis Towers Watson's (WTW) Unify tool is an example of an enterprise-wide system integration, automation and governance platform designed specifically for the insurance industry. It can integrate with disparate systems in an insurer's ecosystem, allowing application programming interface (API)[5][6] driven data flows, automating routine tasks and providing best practice built-in governance reporting. It can be integrated with other data visualisation tools and help streamline the broader finance reporting process.

- **Streamlining Excel file processes**

  Manual data inputs, extraction of results from actuarial software models, and the subsequent manipulation in Excel models create bottlenecks in actuarial workflows and generating results for finance teams. Using, for example, Python software[7] to convert Excel models into Python code can streamline the process of translating Excel-based calculations into efficient automated scripts which can also be integrated within workflow software to improve user experience. Automation software can be used in conjunction with collaboration tools to facilitate communication and information sharing between teams.

  An increasing number of insurers are also exploring generative artificial intelligence (AI) where security parameters have been set up to leverage available AI tooling without compromising company sensitive data.

- **Incorporating R[8] and Python scripts into business planning tools**

  Integrating R and Python scripts into business planning tools can enable better handling of larger data sets and more complex calculations, enhancing comprehensive business planning. Again, these can be integrated within workflow software to improve user experience.

- **Other actuarial modelling considerations**

  Most common actuarial models, like Prophet, currently run on central processing units (CPUs), which can take days for a full model run with thousands of simulations to compute. Insurers are looking at ways to improve processing time by improving speed and reducing cost. In addition to replacing existing actuarial models with low code actuarial software solutions, e.g. RiskAgility Financial Modeller (FM), or other low code solutions, e.g. SAS that integrates with other process software tools, some insurers are migrating these models from CPU to graphics processing units (GPU) (which is a specialised processor that enables a significant improvement in processing speed and cost reduction). With GPU the vectorisation[9] benefits can potentially outweigh the increased IT costs for some model types.

[5] APIs are mechanisms that enable two software components to communicate with each other using a set of definitions and protocols. (https://aws.amazon.com/what-is/api/#:~:text=API%20stands%20for%20Application%20Programming,other%20using%20requests%20and%20responses)

[6] APIs are an accessible way to extract and share data within and across organisations. (https://www.mulesoft.com/resources/api/what-is-an-api)

[7] Python is a high-level, general-purpose programming language known for its readability, simplicity and versatility. It is used for building websites, software, automating tasks and conducting data analyses.

[8] R programming is a free, open-source programming language designed specifically for data mining, statistical analysis, data visualisation and machine learning.

[9] Vectorisation is a technique used by PC processors to perform calculations on multiple elements of an array simultaneously, rather than processing each element one-by-one. This allows for faster computation, often achieving speeds up to N/4 times faster, where N is the number of elements in the array.

Of course, there are other wider considerations that need to be taken into account:

- When assessing which platform might be the best for your organisation, consider factors such as functionality, cloud support, service support, maintenance and available skill sets.
- Assess the extent of compatibility between current and prospective model platforms and data conversion tools.
- Agree on standardised data specifications within the organisation and implement appropriate mechanisms to effectively monitor the maintenance of data lineage[10].
- Continuously assess the objectives of the transformation journey to ensure that focus is maintained on efficient business outcomes and that the design remains fit for purpose.
- Engage with business-as-usual teams during the change journey to circumvent and minimise transition risk.
- Supplement the operational efficiency transformation journey with the involvement of the right level of expertise where required, e.g. process automation, data management, technology solutions and/or program management experts.

From pain to gain

Optimising business performance requires a nuanced approach to process engineering. High transactional data processes benefit from traditional process mining techniques, which allow for clear identification and automation of repetitive tasks. Tools like RPA and advanced workflow management systems can significantly enhance efficiency and reduce manual effort.

However, non-transactional processes, characterised not only by high volumes of data but also more complex and nuanced workflows and interventions, demand a different strategy. Here, similar steps are followed to understand and map out processes in detail, identify bottlenecks, and leveraging tailored automation tools, but with a different lens. Only once these steps are effectively taken can integration of other advanced technologies be considered for further investment to streamline operations.

Ultimately, the key to successful process optimisation lies in a comprehensive understanding of the particular challenges and requirements of the type of process you are dealing with, and the specific goals, objective and nuances of your organisation. Once that is understood, the happy path may not be that elusive any longer.

[10] Data lineage is the process of tracking the flow of data over time, providing a clear understanding of where the data originated, how it has changed, and its ultimate destination within the data pipeline. (https://www.ibm.com/topics/data-lineage)