



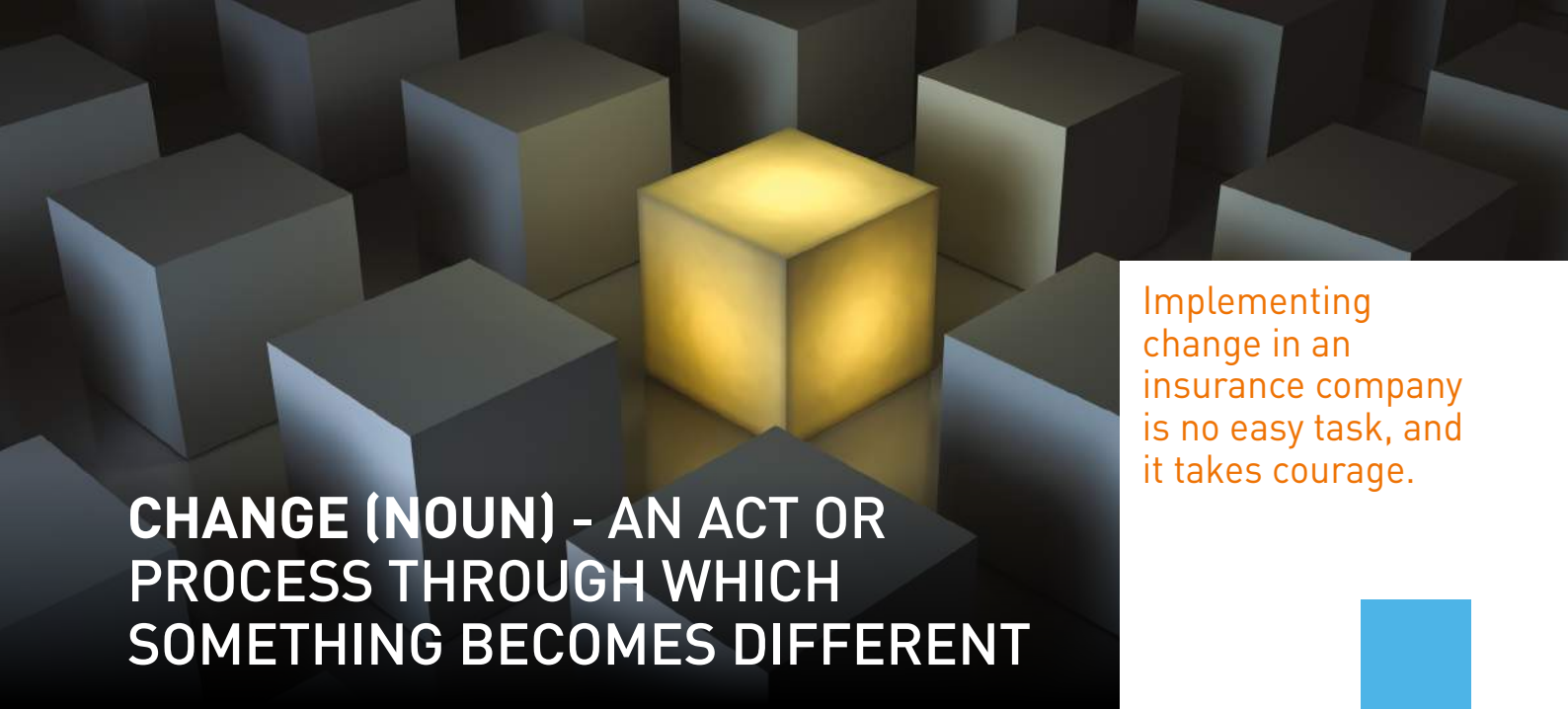
TRANSCENDING THE NORMAL: A NEW MODEL FOR RISK MANAGEMENT

How IGI future-proofed its risk, capital
and actuarial modelling capabilities

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CONTENTS


CHANGE (NOUN) - AN ACT OR PROCESS THROUGH WHICH SOMETHING BECOMES DIFFERENT	pg1
IGI'S CHANGE MANIFESTO	pg2
BREAKING DOWN THE SILOS: A BLUEPRINT FOR INNOVATION	pg3
HOW WE DO IT: "ABH-ABH" OR PIECE-BY-PIECE	pg4-5
FUTURE PROOFING THE RISK MANAGEMENT FUNCTION	pg6-7
TOO RISKY NOT TO TAKE A RISK	pg8



Implementing change in an insurance company is no easy task, and it takes courage.

CHANGE (NOUN) - AN ACT OR PROCESS THROUGH WHICH SOMETHING BECOMES DIFFERENT

Change is a risky business. But taking measured risks is what insurance is all about. Every day insurers make decisions based on carefully calculated assumptions, through analysis and years of expertise and knowledge.



Hatem Jabsheh
Chief Operating Officer

At IGI, we have used this expertise and knowledge for our own development to re-assess how we look at our own evaluation of risk. As a result, we have completely overhauled our existing risk, capital and actuarial analytics platforms.

After a year of transformative change, we now have two new cutting-edge analytical platforms that are innovating and changing the way we do business.

Implementing change in an insurance company is no easy task, and it takes courage. We knew we had to modernise our systems in order to keep up with our clients' needs and future-proof our business. So, we convinced management and are now in the midst of creating a new modus operandi from within the company via an amazing transformation journey to facilitate a more predictable underwriting performance, while creating operational effectiveness. It will also improve and stabilise earnings over time, and give us a more sophisticated capital management platform.

The vision of the current risk and capital team is now creating massive value for the company by encouraging IGI to think outside of the traditional box of enterprise risk management, and to instead find ways that the company can innovate across all business lines.

Spearheaded by our Group Head of Capital and Risk Simon Spurr, and Sunnie Luthra, our Risk and Capital Actuary, this project has driven a culture of innovation within the company.

This is an exciting journey for IGI. It's not just about technology, it is about people using technology to benefit our clients and shareholders alike. At IGI, we believe in getting the right people who will use the right technology to stay one step ahead of the competition. Think big, be big.

IGI'S CHANGE MANIFESTO

Our mission is to bring our risk and actuarial functions back to the fore – using incredible technology coupled with internal talent.

IGI is on a mission to transform its risk and actuarial functions by using cutting-edge technology and sophisticated analytics.

Our mission is to bring our risk and actuarial functions back to the fore – using incredible technology coupled with internal talent in order to deliver real and sustainable value.


IGI has built a diverse and highly-skilled international team and provided them with the support and resources to implement a step-change in capabilities.

During 2017, this has seen the rapid prototyping, build, deployment and embedding of two relatively nascent, but innovative technologies: Reynolds Porter Chamberlain (RPC) 'Tyche' stochastic modelling, and Dynamo 'Psicle' end-to-end analytics and robotic process automation.

IGI was one of the first companies to deploy each of these technologies, and the first in the world to deploy the two side-by-side – taking two best-of-breed tools, tailoring them to the company's requirements, and embedding their use at the heart of the company's analytics ecosystem.

The speed, nature and scope of implementation has made IGI a reference site for others seeking to transform their risk and capital analytics.





Skilled people using analytics in an intelligent way that brings real insight into the business.

BREAKING DOWN THE SILOS: A BLUEPRINT FOR INNOVATION

Simon Spurr
Group Head of Risk and Capital Management

Solvency II has rightly put the spotlight on risk, capital and actuarial modelling, with insurers working to embed wider risk management and governance capabilities in the context of ever-increasing internal and external demands. A side effect of this has been the creation of risk functions, risk departments, risk policies, terms of reference, hugely complicated models and – importantly in the context of this study – a tangled web of ineffective analytics.

Rather than increasing the focus on risk management, in some cases this process has actually detached the notion of risk modelling from the company, running the danger of it becoming a part of compliance. So much time has been spent churning out numbers and ticking boxes that the risk 'function' has been prevented from contributing to strategic and commercial goals.

The ever-increasing demands have led to an ever-increasing network of fragmented, often 'end user', analytical solutions. These are labour intensive, repetitive activities and often use opaque models to measure and report risk that in reality adds little value to the business. As a result, teams of highly-talented professionals are bogged down in time-consuming and relatively low-value tasks. There is nothing more frustrating than seeing teams of excellent people maintaining documentation and grinding out numbers on clunky Excel spreadsheets.

By transforming the way we work, we can free up skilled people to use analytics in an intelligent way that brings real insight into the business. When we do this, risk management and capital modelling sit at the very heart of the organisation – where they should belong.

When I joined IGI in 2016, I inherited a risk function that exhibited many of the characteristics typical of a traditional insurance company. With the backing of the executive, we set about changing this. I hired a crack team of incredible people, equipped them with the best technology, and in conjunction with our partners in the actuarial function, let them fly.



HOW WE DO IT: “ABH-ABH” OR PIECE-BY-PIECE

Simon Spurr
Group Head of
Risk and Capital
Management

Change can be hard to implement, and one of the main challenges is winning the hearts and minds of staff. Unless they can see the tangible benefits of change, it can be very difficult to get them to buy in to this new way of thinking. It is the people on the ground that can make or break transformation projects – and the last thing we wanted was grudging co-operation from IGI staff. We needed everyone to believe in the transformation.

The risk and actuarial team at IGI quickly realised that we wanted to use Tyche and Psicle - both for their significant standalone benefits and, longer term, combined with a holistic ecosystem that would make life easier for everyone and deliver massive value.

In the Middle East, there is a saying, “abh-abh”, which means “piece-by-piece”. Our task was to demonstrate the real-time results to management in bite-sized parts, rather than presenting a massive business case for change and getting dragged into the analysis paralysis that is typical of major system change projects.

You need strong support from the top to effect change. Having someone at board level who sees the potential and creates the space for innovation is key. Once there is powerful leadership and sponsorship, it is just a matter of finding the people to deliver the change. Our internal sponsor was IGI’s Chief Operating Officer, Hatem Jabsheh.

In Q1 2017, Hatem’s role was to help us to convince the rest of the executive team to make the difficult (and on the face of it potentially risky) call to completely throw away our old capital modelling platform and commit to one that promised to transform everything – Tyche.

IGI licenced Tyche in Q2 2017 – ahead of the system gaining mainstream acceptance. Through effective partnership working with the RPC team, we already have a full underwriting model in place providing valuable insights in to the risk profile of the business. Tyche will be fully embedded in the framework for managing economic capital levels and risk reinsurance optimisation during 2018.

Having justified the decision to commit to Tyche through the early wins achieved, and following the same approach of rapid prototyping and validation, just a few months later we went back to the same executives and secured their commitment to the ‘Psicle’ end-to-end analytics platform.

Now we have a team of motivated professionals striving to add value whilst killing off those fragmented Excel processes one by one. Some would call it “agile”, we will stick with “abh abh”.

The transformation is already attracting significant interest from peers, regulators and rating agencies. Less than a year into the journey, A.M. Best has recognised the value of the developments through an uplift in the company’s A- rating to ‘Positive’, citing the continuous improvements in the risk framework and developments in capital modelling capabilities.

TYCHE

Tyche is a high speed, flexible and low-cost modelling platform. As management, shareholders and the regulators strive for ever greater insight into the risks firms face, the ability for companies to model risks quickly, flexibly and appropriately has never been more important. Tyche has been developed to help firms respond to these challenges and gain deeper and far more timely insight by leveraging affordable “commodity” hardware and ground-breaking advances in parallel software design. This parallel processing is key and lies at the heart of Tyche’s performance capabilities and allows Tyche to work silently in the background so users can get on with more business centric tasks that deliver even greater value. The structure of Tyche allows models to be audited more easily and the process to debug models is streamlined to reduce the complexity of correcting

large-scale calculations. These advances are all core to the design of Tyche and allow companies to create real value from their models by integrating their use in their day to day decision making.

The design goals at the heart of Tyche are simple – deliver a solution that is faster, easier and cheaper. We have done that. By being easier to build, easier to debug, and easier to validate (and offering runtimes that can be up to 100 times quicker than incumbent systems even on standard desktop, server and grid hardware) modelling in Tyche can lower operating costs materially. Whether you are a smaller team or a global multi-jurisdictional enterprise, Tyche gives you the power and the functionality to do things you have never done before.

PSICLE

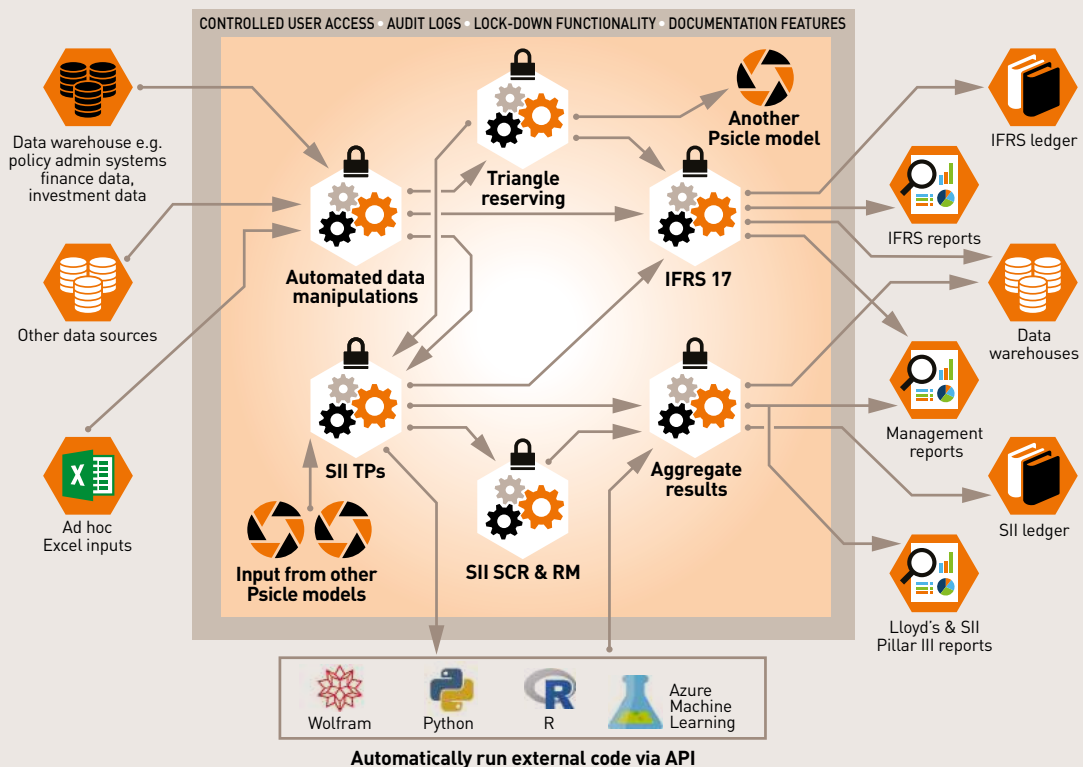
Psicle is a next generation actuarial and financial modelling platform that leverages the latest technology stacks, intelligent optimisation and a wide variety of statistical languages to industrialise business-critical financial models.

In addition to the Reserving and Solvency II applications utilised to date within IGI, a range of international clients have applied it to support Pricing (GLMs and Exposure Rating) and Reinsurance Optimisation and a number are currently exploring Psicle-based IFRS 17 solutions.

From a robust base underpinned by SQL and hosted either physically or virtually, Psicle provides connectors for inbound data (SQL databases, flat files, Excel spreadsheets, SAS data files and Web API’s), calculations (Psicle Gadgets, R, Python, Wolfram, Azure Machine Learning) and outbound data (SQL databases, flat files and Excel spreadsheets).

A key advantage of the platform, as evidenced at IGI, is the fact that with the exception of hosting and opening up source data APIs, the entire model build and operation can be performed rapidly and within risk, finance and actuarial teams with limited training.

Example Psicle Model





To put it simply, by increasing the number of simulations we see more stability in the outputs.

FUTURE-PROOFING THE RISK MANAGEMENT FUNCTION

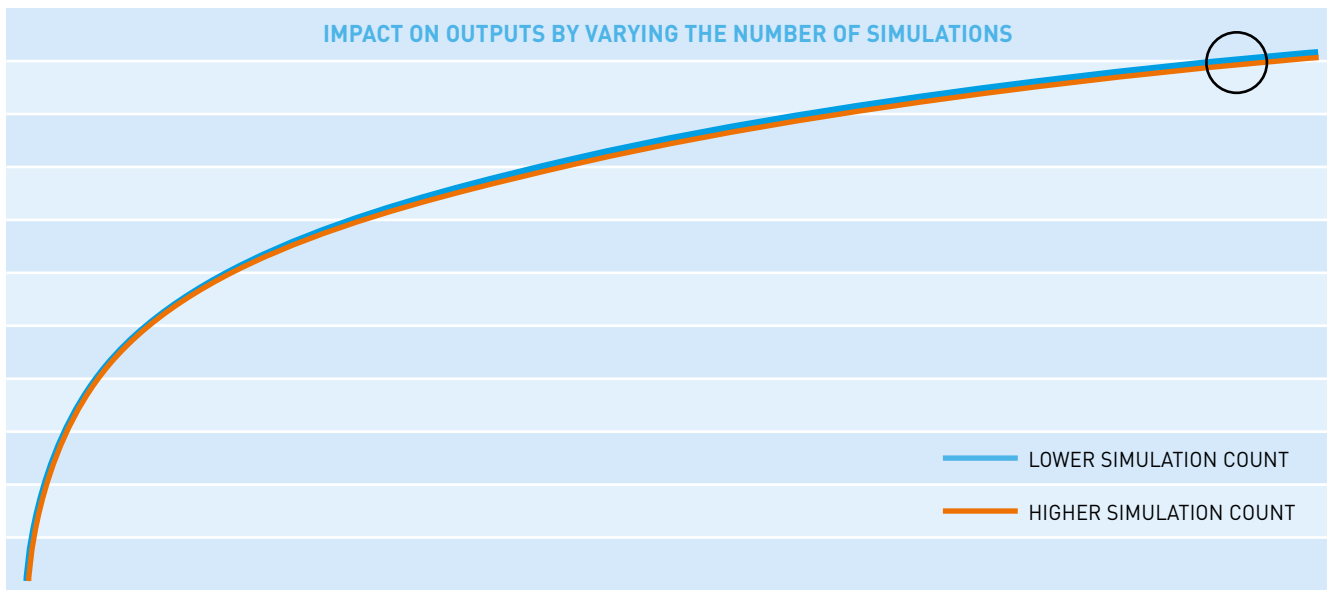
Sunnie Luthra
Risk & Capital
Actuary

Why Tyche and Psicle? Tyche addresses all the limitations that we found frustrating in our legacy platforms. It gives us amazing computing power. It provides a paradigm shift akin to moving from a huge manual calculator to Excel spreadsheets, because it fully utilises the latest advancements in computing power and enables us to run one million simulations before we can finish our lunch break.

To put it simply, by increasing the number of simulations, we see more stability in the outputs, which makes them less prone to random fluctuations. We can now model at the lowest possible grain, run the 'what ifs', try out different reinsurance structures, and sensitivity test all our expert judgements at one million simulations, rather than the typical 50,000, to distinguish the signal from the white noise.

It gives us a pre-built model library that, unlike some legacy platforms, is completely open and transparent rather than being a 'black box' or 'tangled web', and it doesn't require deep coding expertise or huge teams of modellers.

Psicle shares some similarities with Tyche - not least in that it was designed by actuaries and modellers and is relatively new in terms of widespread adoption.



A process that took days to complete now takes a matter of minutes. This has freed up our skilled actuaries to perform deep analytics for all the individual portfolios.

Psicle gives us efficient, grown up, repeatable, auditable processes that can be applied to a range of modelling and analytical challenges.

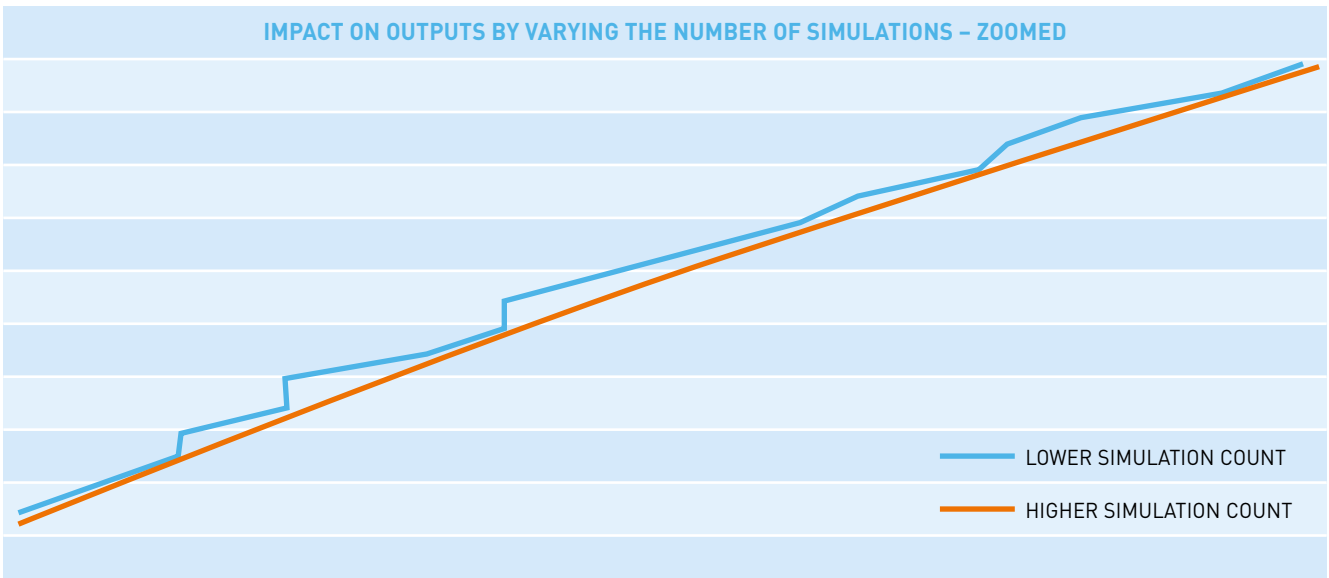
Initially, we applied it to automating the work relating to Solvency II, such as Technical Provisions, Standard Formula, and Regulatory Quantitative Reporting. It did formulaic, but nevertheless important, work that was fragmented, manually-intensive and was sucking the life out of our highly-skilled people. For example, a process that took days to complete now takes a matter of minutes. This has freed up our skilled actuaries to perform deep analytics for all the individual portfolios.

At Q4, in parallel to bringing on board our new Group Chief Actuary, we extended the implementation to cover the core IFRS Reserving – providing greater management insights and flowing straight-through, enabling us to soft close with minimal human intervention.

The next step in our journey is to integrate both the systems by making them talk to each other, allowing us to assess the impact of various strategies by looking at all the metrics, which include balance sheets, income statements, and capital adequacy ratio for both Bermuda and UK entities – with all of the metrics being subject to different regulations. Going forward, the platform has the potential to support IFRS17 and the analytics that would be required were the company to move into Lloyd's.

The longer-term project is to combine Psicle and Tyche. They are both hugely powerful in their own rights, but there is a bigger story here. We want to wrap the robotic automation and data management/ analytics of Psicle around the huge stochastic processing power of Tyche. It's been given the name 'Psyche Inside' by the IGI team, and Simon has been branded 'Chief Psycho'.

IMPACT ON OUTPUTS BY VARYING THE NUMBER OF SIMULATIONS – ZOOMED





IGI is executing a very modern, forward-thinking plan, regardless of market conditions.

TOO RISKY NOT TO TAKE A RISK

The insurance industry accepts that its business model needs to change if current players are to compete in a rapidly-evolving landscape.

Much of the older, clunkier software is not designed to cope with the volumes and complexities of today's insurance business and processes. At some point, it becomes too risky to not invest in new technology.

While it is easy to put such large and complex IT projects on hold, IGI is executing a very modern, forward-thinking plan, regardless of market conditions. Future-proofing your business makes sense, but thinking differently about risk is a game-changer.

This is an exciting journey
for IGI. It's not just about
technology, it is about
people using technology
to benefit our clients and
shareholders alike.



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