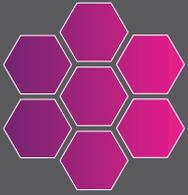


**Tyché**

FINANCIAL MODELLING





# Tyche

FINANCIAL MODELLING

## Tyche® – Real Time Intelligence

- Ground breaking speeds, throughput and scale
- Flowgram™ visual modelling interface
- Enterprise ‘Out of the Box’
- Lower total cost of ownership

## Innovative

- Vectorised processing
- Hive™ Compute – Ultimate scalability
- Speed optimised function libraries

## Non Life

- Capital, Reinsurance Pricing, Reserving (IFRS)
- Cat Exposure and Accumulation Management

## Life

- Valuation, Pricing, Capital Modelling, ESG
- Automated model generation
- End-to-end workflow

## Deployment Options

- From laptops to server farms to cloud
- On Premise, SaaS or IaaS
- Runs on Cisco, Dell or HP Infrastructure

# Introduction to RPC Consulting

RPC Consulting (RPCC) is a specialist actuarial consultancy providing regulatory, risk and pricing analytics across the life and non-life sectors using our Tyche solution.

Our team of 50 consultants and 25 software engineers include market leaders in their respective fields.

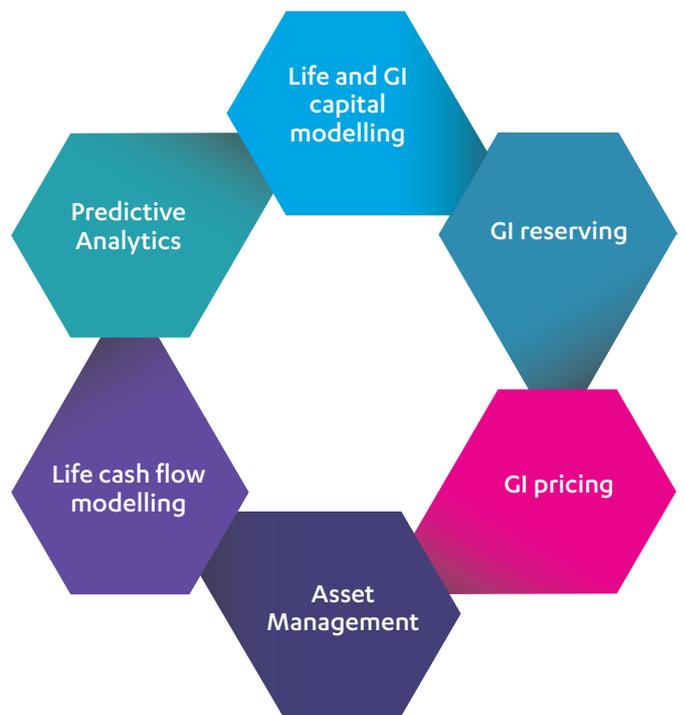
# Introduction to Tyche

Tyche is a modern, high quality and easy-to-use software platform. It runs at blisteringly fast speeds.

Tyche is domain agnostic. Our focus to date includes the non-life and life insurance sectors across a wide range of business areas, but we also provide solutions to the pension sector, including one of the UK's largest schemes.

Tyche addresses the complex challenges facing insurers; optimising capital, pricing risks, responding to regulation and improving efficiency. It offers truly ground breaking performance across a range of deployment options; whether using laptops or large scale server grids, situated on premise, cloud hosted or SaaS.

Our license fee structure, ease of adoption, cost effective hardware and competitive rate card ensures a Tyche based solution can materially lower your total cost of ownership versus alternative platforms, even when factoring in transition costs.



*"We have reduced our run time from 6 hours to 25 minutes, which has significantly increased our strategic analysis capabilities and agility to respond quickly to the modelling demands of our business."*

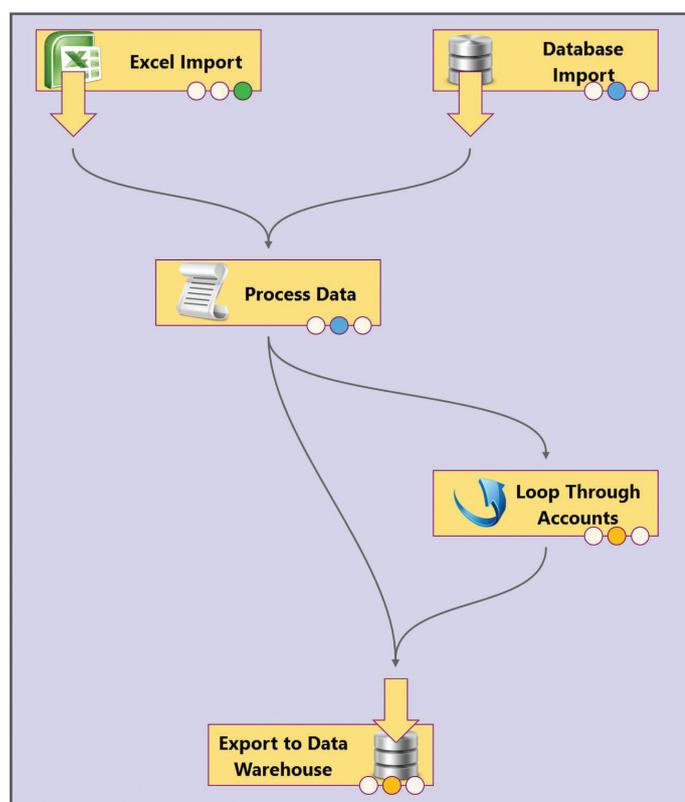
*A joint team from Aspen and RPCC were able to migrate our capital model in 5 months – all delivered on budget and within the required timescales."*

Ajay Chhabra, Head of Risk Capital at Aspen, October 2018

# Build powerful models quickly in Tyche

Actuaries and other model builders can become productive users of Tyche in days not weeks.

## Flowgram® – A visual modelling environment



## T# – An intuitive language for analytics

```
6 // Find the VaR for each asset type
7 PortfolioProfit = Sum[asset,sims](OpeningFunds - ClosingValue);
8 AssetVaR = CDFInverse(PortfolioProfit, 99.5%);
```

The development environment eases model building with familiar modern functionality:

- Transparent and self-documenting scripts
- Supports syntax highlighting, subscripts and intellisense
- Error checking via conditional stochastic breakpoints
- Recursive profiling to identify bottlenecks
- Integrated audit and node level regression testing

## Access a wide range of core features:

- Rapid and straightforward import and export for all common databases, Excel and CSV formats.
- Tyche can handle truly enormous datasets – some models have exceed 10TB “in flight” processed concurrently.
- Powerful functions out-of-the-box including statistical distributions, parallelisation, optimisation, rootfinding and copulas

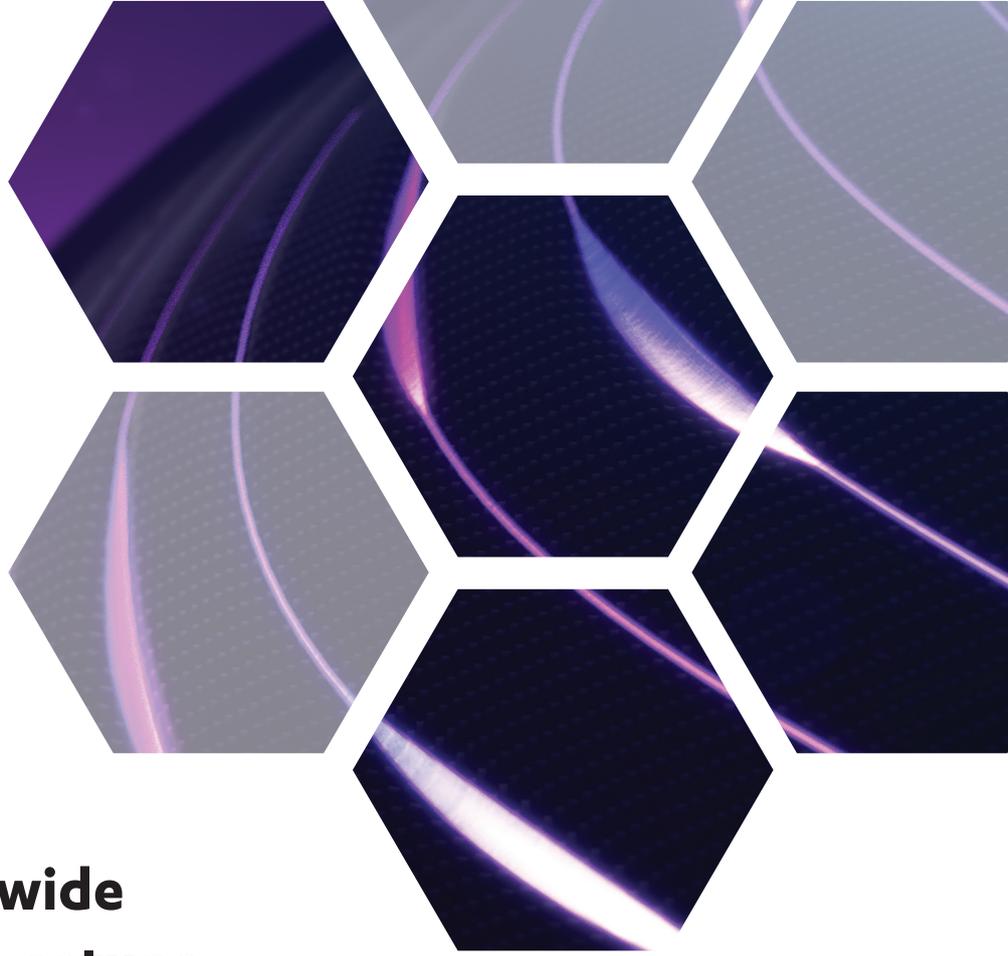
## Easily extend core functionality

Tyche has been designed to help users build up their own bespoke libraries tuned to their specific business needs:

- Re-use code as User Defined Functions
- Extend the Tyche syntax yourself by embedding C# code or other languages into your model
- Explore Tyche’s rich API to easily embed Tyche into your business processes, including automated workflows or in-house front office applications.

## Training

Tyche contains detailed documentation, tutorials, examples, mathematical specifications and easy to following “how to” videos. Free monthly Introductory and Advanced training courses are available.



## Tyche works on a wide range of hardware setups

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Tyche is an Intel oriented solution operating across a wide range of hardware options. Installations can start at the small scale with “laptop” based infrastructure, but corporate solutions typically scale through to the single server or, on occasion, multi-server multi-Terabyte solutions – all depending on modelling needs. Tyche delivers high speed analytics with a focus on getting analysis to the client in real time to allow better business decision making.

Tyche takes full advantage of modern hardware and will seamlessly take advantage of future chip developments. Using multi-core execution and AVX instructions, Tyche brings the full power of the latest Intel CPUs to bear on your model’s execution. Having been designed as a 64-bit executable from the outset, it can cope with even the most memory-intensive models.

By adopting Tyche as their modelling platform, our clients have been able to replace vast and expensive compute grids with a single machine, dramatically reducing their maintenance and support costs. Many are considering moving to the cloud, either with their own cloud solution or via Infrastructure as a Service (IaaS) or Software as a Service (SaaS) supported by RPCC.

Modellers have full control over how Tyche breaks up and parallelises their model, identifying sections that are amenable to multi-threaded and multi CPU execution.

Tyche integrates with industry-standard schedulers such as Microsoft HPC Pack to distribute models over a grid of machines.

For larger models we have also developed a transformational technology called Hive™ allowing low level functions to distribute across physically separate machines by synchronising and sharing CPU and RAM. Hive avoids the distributed code bottlenecks seen in some other grid distribution approaches and allows models to scale even further and with greater speed and accuracy. Whether you’re exploring the extreme tail of the capital distribution across 10 million simulations, or using nested stochastic modelling on 10,000 by 10,000, Hive can make it happen.



# Robustness and quality are fundamental

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## Quality and Testing

Tyche development follows industry-standard best practices to ensure the quality and robustness of the released product.

Code is managed through a source control system that ensures full traceability of all changes made. We use a continuous integration process to run thousands of automated tests on every change to the source code which detects and fixes regressions to functionality before they can be released.

The build process produces a full Tyche product installer, including Help documentation – the same process being used for release builds as for internal builds ensuring the process is repeatable and robust.

More in-depth tests against client models, and to measure performance, are run overnight, each night. Once builds pass these automated test suites they are used internally by our consulting team before being released to clients.

## Release Process

Major Tyche releases are twice a year in Q2 and Q4. Each major release is supported for 24 months. This means that we have 4 supported major releases at any given time. RPCC will fix important bugs during the support period for a given Major release. Because our release process is fully automated, RPCC can also make pre-release versions of Tyche available to clients who want to test or make use of specific features.

## 24/7 Support

RPCC provides a comprehensive support process for Tyche. Issues can be reported telephonically through a 24/7 triage centre or online. All issues are managed to ensure they are tracked through to resolution in accordance with our comprehensive support level agreements. Issues are prioritised according to your needs and patches released where critical.



## Our Partners

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Alun Marriott – Managing Partner  
Jonathan Broughton – Partner (Non-Life)  
John Rowland – Partner (Life)  
Chris Linley – Associate Partner  
James Norman – Associate Partner  
Sam Worthington – Associate Partner

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