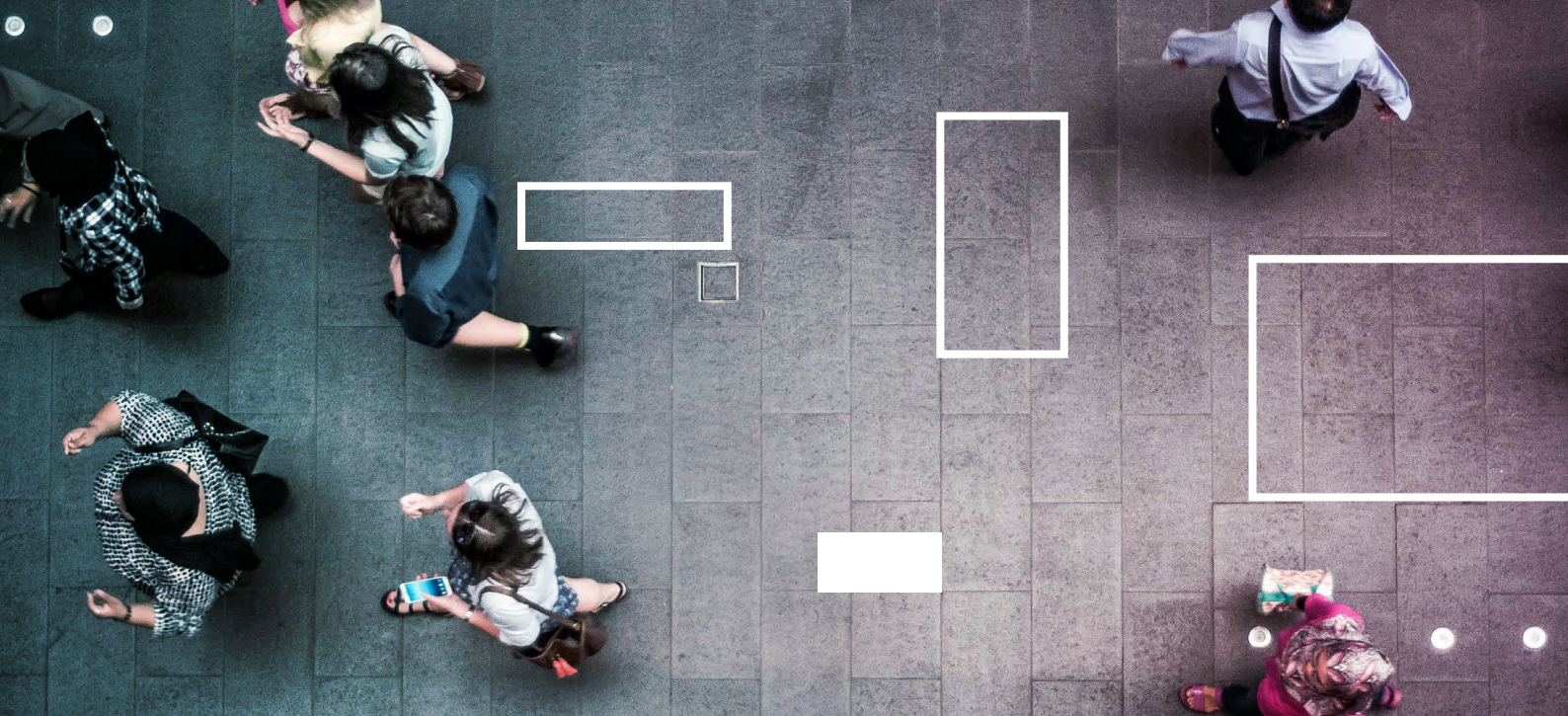# RiskAgility FM IFRS 17 Calculation Engine

Delivering IFRS 17 efficiency for insurers

RiskAgility FM IFRS 17 Calculation Engine provides an efficient solution to generate the IFRS 17 numbers, saving you time and effort in your end-to-end IFRS 17 reporting processes.

Regulation driving more efficient processes

Financial operating models are facing increasing scrutiny, as businesses look to move away from inefficient, poorly-managed processes, make better use of available information, and move on to faster, more scalable and more flexible platforms.

Regulatory and other reporting requirements are driving the pace of change, in particular IFRS 17, with governance, automation, systems integration and well-defined workflows at the centre of the new world.

Some market players are well advanced in transforming their processes and adopting new technology. Late movers are being left with higher expenses, as well as less reliable and less timely management information.

What is RiskAgility FM IFRS 17 Calculation Engine?

RiskAgility FM IFRS 17 Calculation Engine is a calculation solution that enables the seamless estimation of the insurance contract liabilities under IFRS 17 by applying either the building bock approach (BBA), the variable fee approach (VFA) or the premium allocation approach (PAA) on standardised actuarial and actual input cashflows and IFRS 17 assumptions. Users are able to move through an intuitive, fully transparent and flexible calculation process that is built to support the analysis, review, reporting, validation and sensitivity testing required to deliver and sign off the IFRS 17 financial statements.

Compliant IFRS 17 functionality by the RiskAgility FM Calculation Engine

Transparency, flexibility and efficiency are at the heart of RiskAgility FM IFRS 17 Calculation Engine. Key calculation functionalities include:

- Discounting of input cashflows per group/unit of account (UoA) at the required various discount curves for liability for remaining coverage (LRC) and liability for incurred claims (LIC) liability components

- Risk adjustment based on a cost of capital and driver approach, or based on provisions for adverse deviations through additional shocked input cashflows

- Initial Contractual Service Margin (CSM) per group/ UoA and CSM roll-forward management, i.e. interest accretion, unlocking, experience adjustments and release to profit and loss (P&L) depending on the measurement approach, i.e. differentiating between products classified as under the general BBA or the VFA and potential local market variants

- The CSM calculations allow for the necessary steps to establish and roll-forward a so-called loss component (LC) once the CSM is consumed

- Other comprehensive income (OCI) option for liability calculations and resulting finance expense P&L variables split per UoA

- Interface to include actual data and projected cashflows to calculate projected key variables

- Minimum cashflow input handling, optional cashflow inputs and additional analysis of change variables for setting up the IFRS 17 P&L, balance sheet and disclosure tables, and more detailed results analysis.

Unique benefits of the RiskAgility FM IFRS 17 Calculation Engine steered by Unify

We have built the IFRS 17 Calculation Engine on our best in class financial modelling platform RiskAgility FM, which includes an application specific interface to our Unify integration platform. This provides our clients with a uniquely seamless, governed and audited process in a timely and cost-efficient manner.

In this set-up you are able to realise a targeted one engine IFRS 17 implementation strategy that not only works for point in time reporting, but also for business planning and forecasting. In addition, it produces cost savings through automation and avoids clumsy sub-ledger system maintenance. The benefits of our enterprise solution also in conjunction with DataValidator, our extract, transform, load (ETL) tool and data validation software on the Unify platform, are summarised below.

Business uses

- **Holistic and central solution** that provides consistency across many reporting entities
- **One access point** for all users through **Unify web interface** with different access rights
- **Best practice analysis capabilities** allow the impact on results of input choices, cashflows and experience to be clearly understood
- **Process automation** allows users to meet the timelines, focus on results and reduce costs
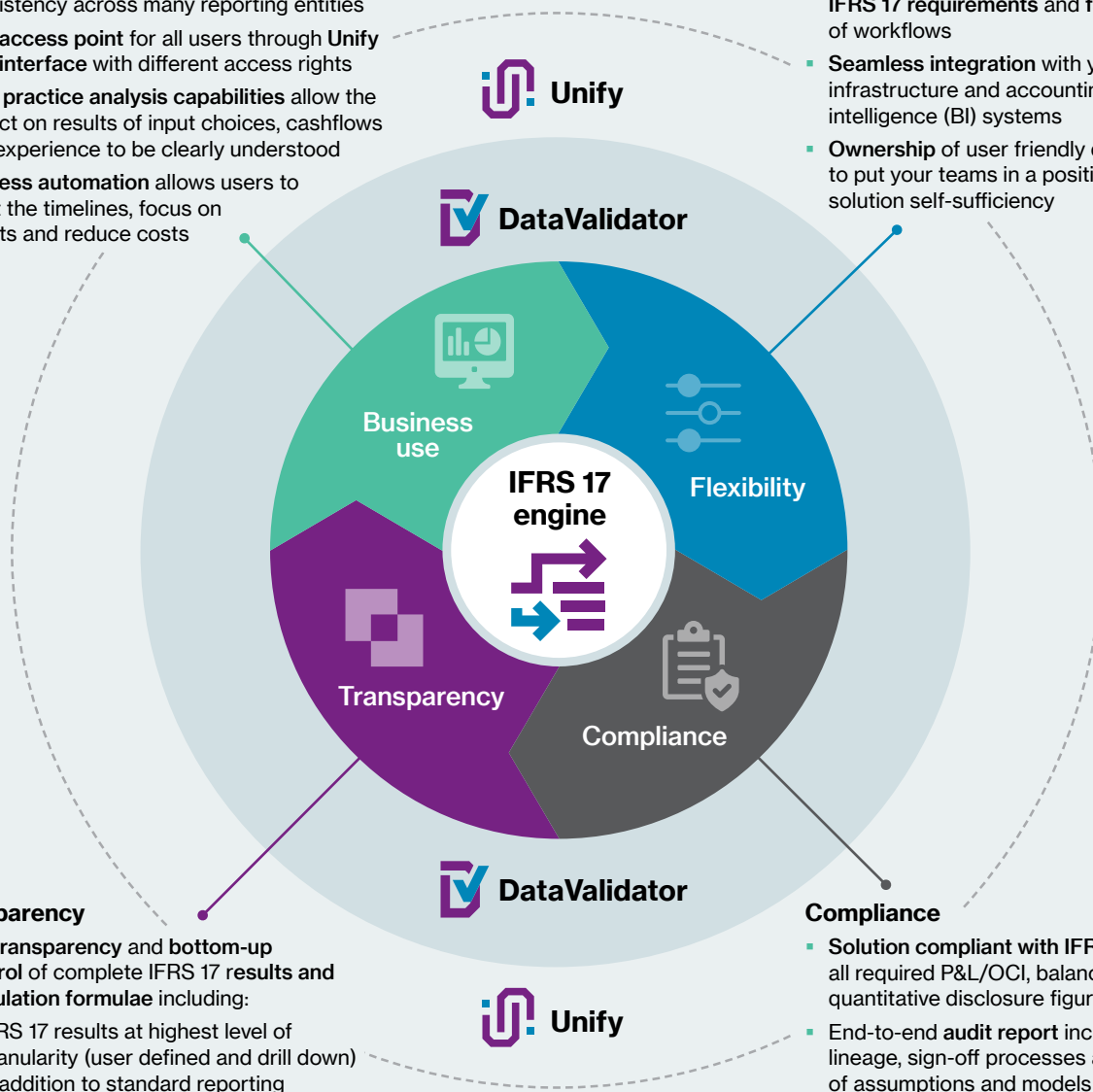
Flexibility

- **Easily adaptable to any client specific IFRS 17 requirements** and **fast development** of workflows
- **Seamless integration** with your existing infrastructure and accounting/business intelligence (BI) systems
- **Ownership** of user friendly development tools to put your teams in a position to expand the solution self-sufficiency

Unify

DataValidator

Business use

Flexibility

IFRS 17 engine

Transparency

Compliance

DataValidator

Unify

Transparency

- Full **transparency** and **bottom-up control** of complete IFRS 17 r**esults and calculation formulae** including:
  - IFRS 17 results at highest level of granularity (user defined and drill down) in addition to standard reporting
  - **Detailed** present value of the cash flow (PVCF)/CSM/LC **movements** and **out-of-the box analysis of change**
- **Full access** to the programming code

Compliance

- **Solution compliant with IFRS 17 standard**: all required P&L/OCI, balance sheet and quantitative disclosure figures
- End-to-end **audit report** including data lineage, sign-off processes and versioning of assumptions and models out of the box
- Validation of all inputs and IFRS 17 results through DataValidator
- Strong **governance, auditability, traceability** of data and **control** through Unify

An efficient, easy-to-use and robust IFRS 17 reporting solution

RiskAgility FM IFRS 17 Calculation Engine uses the latest technology to provide a modern and easy-to-use interface to produce the IFRS 17 insurance contract liabilities estimates, including the CSM under the general model, all within a well-defined, robust and transparent environment that takes the complexity out of the process.

Some of the benefits of the RiskAgility FM IFRS 17 Calculation Engine include:

- Feed six or more sophisticated and granular cashflow productions into fulfilment cashflow estimates without losing necessary cashflow details for the results analysis.

- Manage the production and storage of inputs, assumptions and calculations in the IFRS 17 process including contractual service margin, loss component, discount rates and risk adjustment through a minimum of input assumptions.

- Account for the estimation of insurance contract liabilities and insurance service revenue and expenses under the BBA, VFA or the PAA, including the assessment of the loss component applying different amortising methods.

- Assess the impact of the new IFRS 17 revenue concept according to different choices for coverage units by measurement approach and product types immediately during your IFRS 17 implementation and through desktop versions of your RiskAgility FM IFRS 17 Calculation Engine.

- Drill into results and look into any IFRS 17 engine calculation formulae through a user-friendly calculation code manager.

- Produce draft key reporting elements of the financial statements as well as the main disclosures to feed into your financial reporting framework.

- Once you are happy with key assumptions and the engine coding, our consultants typically support your team during the first time IFRS 17 implementation: with one simple mouse click you submit your latest RiskAgility FM IFRS 17 Calculation Engine version to the Unify environment to be locked for production.

- Produce your IFRS 17 results through the Unify environment, which automatically governs and documents the results production through audit trail reports.

- Integrate calculated solution results into your wider reporting and accounting framework using workflow management processes through Unify by dynamically populating a BI system or/and producing a posting file for your accounting system.

Figure 1: **Illustrative process for performing desktop calculations with the RiskAgility FM IFRS 17 application**

The components of RiskAgility FM IFRS 17 Calculation Engine

Figure 1 describes the process of how IFRS 17 reporting runs are achieved by developers and users of the application in a desktop environment. Only two input assumption files, one for economic and one for IFRS assumptions, need to be parameterised, and six input cashflow files produced before an IFRS 17 projection task can be executed and outputs analysed in the MS Excel Output reader that comes with the engine.

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Once the input cashflow files are produced in the required input format it is matter of minutes to parameterise the engine and execute a first reporting run.

In the desktop environment the RiskAgility FM Input Manager manages the inputs comprising:

IFRS 17 assumption files

The assumptions are organised in two MS Excel spreadsheets containing the economic assumptions and IFRS 17 parameters respectively.

By defining unique names for the groups of insurance contracts/UoA and parameterising their calculation characteristics, such as setting the measurement method in the IFRS 17 assumption file, the overall data model is defined by the granularity requirements of the user. These unique group names need to correspond to the generated cashflow input files (see *Figure 2*).

Figure 2: **Definition of key calculation features by UoA**

group	csd_year	csd_month	fund	oci	measurement_method
ProdB_2017	2016	12	fund_1	N	VFA
ProdA_2017	2016	12	fund_1	N	BBA

The input manager, (see *Figure 3*), organises the model connections to these input files as displayed for the locked-in discount curve in the economic assumptions file:

Figure 3: **Example screen shot from the input manager**

Cashflow input files

The RiskAgility FM Calculation Engine uses a series of cashflow input files all in one standardised input data format, that should contain projected monthly cashflow items per UoA (or "cohort") for the actual and future projection periods.

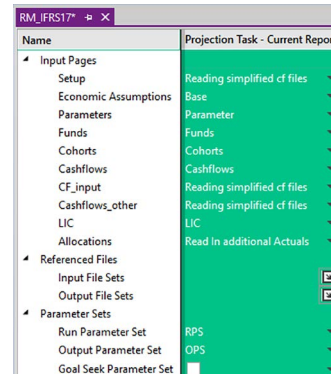At a minimum the following cashflow input files are needed:

- **LRP** – this input file contains the relevant information as projected and calculated at the last reporting date. This is relevant for the existing business and cohorts inforce at the last reporting date. The format of this input file is slightly different from the format of the other five input files, as it contains the CSM and the LC in absolute terms as calculated previously.

- **New Business** – contains cashflows for the new business policies written during the current reporting period (for cohorts with a cohort start date before or after the last reporting date).

- **Actuals** – the actual claims, expenses, coverage units etc. per cohort between the last reporting period and valuation date are included here.

- **True-up** – for the BBA this includes projected cashflows per cohort applying the new inforce policy file at the (new) valuation date but still using projection assumptions as at the last reporting date. Under the VFA, where effects of bringing in updated inforce policies and new assets cannot be isolated, this input run typically is chosen to be the same as the next (two) input file(s).

- **AoC_All_Non_Economic_Assumptions_Unlocked** – includes projected cashflows per cohort at the (new) valuation date with all the non-economic assumptions updated.

- **Current** – includes projected cashflows per cohort at the (new) valuation date with the latest valuation date assumptions (economic and operational).

To facilitate a more detailed company specific analysis of change more input cashflows could be utilised as inputs.

All these cashflow input files should be provided in standard *.csv format. The population of all these inputs is typically executed by one DataValidator project automated and governed by Unify.

IFRS 17 calculation

The IFRS 17 Run Manager of the RiskAgility FM IFRS 17 application triggers the method to read in the cashflow files and executes a model run for the selected inputs. Once all input assumptions and cashflow files are prepared the projection task can be submitted in the run manager (e.g. by pressing "F5") and IFRS 17 outputs are produced by the application.

RM_IFRS17* ⊕ ×	
Name	**Projection Task - Current Report**
▲ Input Pages	
Setup	Reading simplified cf files ▾
Economic Assumptions	Base ▾
Parameters	Parameter ▾
Funds	Funds ▾
Cohorts	Cohorts ▾
Cashflows	Cashflows ▾
CF_input	Reading simplified cf files ▾
Cashflows_other	Reading simplified cf files ▾
LIC	LIC ▾
Allocations	Read In additional Actuals ◀ ▸
▲ Referenced Files	
Input File Sets	▣
Output File Sets	▣
▲ Parameter Sets	
Run Parameter Set	RPS ▾
Output Parameter Set	OPS ▾
Goal Seek Parameter Set	☐ ▾

Reporting

The output manager of the engine lets you select which output variables should be produced by the solution. These output settings are selectable for each run in the run manager. P&L, balance sheet and disclosures report variables are exportable in CSV format, enabling the MS Excel report reader and further integration with downstream systems and processes.

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When integrated with Willis Towers Watson's Unify, the solution is able to directly integrate with interfaces/APIs from sub-ledger and general ledger systems.
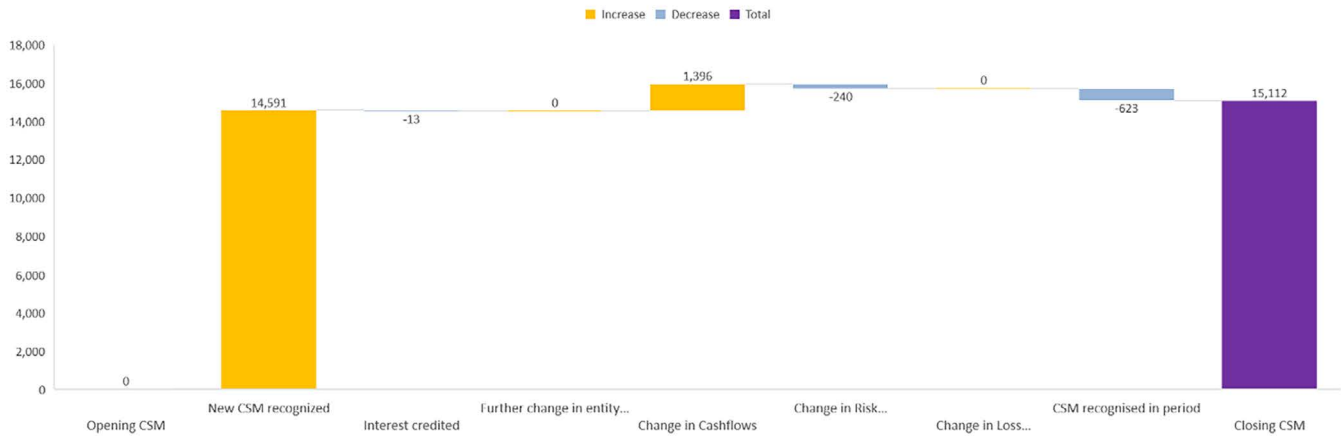
After executing a run on your desktop, you are able to drill into all calculated results per UoA, with direct access to the coding of all variables and interdependencies through the Code Manager (see *Figure 4*).

The MS Excel Reader reads in the produced *.csv file, visualises the results, collects all the disclosure tables and lets you analyse results further, all by UoA (see *Figure 5*).

Figure 4: **CSM after adjustment before CSM release to the P&L**

Figure 5: **Reporting extracts (CSM from beginning to end of reporting period)**

	Estimates of the present value of future cash flows	Risk adjustment	Contractual service margin	Total
Insurance contract liabilities -1	-	-	-	-
Changes that relate to current service	- 15	- 108	- 623	- 745
Contractual service margin recognised for service provided			623	623
Risk adjustment and TVOG recognised for the risk expired	-	108	-	108
Changes related to Current Services	- 15		-	15
Changes that relate to future service	18,933	3,186	15,747	0
Contracts initially recognised in the period	17,537	2,946	14,591	0
Changes in estimates reflected in the CSM	1,396	240	1,155	0
Changes in estimates reflected in the LC	-		-	-
Changes that relate to past service	-	0		-
Adjustments to liabilities for incurred claims	-	0		-
Insurance service result	18,947	3,078	15,124	745
Insurance finance expenses	2,759	22	- 13	2,769
Total changes in the statement of comprehensive income	16,188	3,100	15,112	2,023
Cash flows	372,557			372,557
Insurance contract liabilities	356,369	3,100	15,112	374,581

	Liabilities for remaining coverage		Liabilities for incurred claims	Total
	Excluding onerous contracts component	Onerous contracts component		
Insurance contract liabilities -1	-	-	0	0
Insurance revenue	1,156			1,156
Insurance service expenses	311	-	100	411
Acquisition expenses	311			311
Difference between Actual and Expected Acquisition Expenses and Initial Commissions	- 0			0
Changes that relate to future service: losses on onerous contracts and reversals of those losses		-		-
Changes that relate to past service: changes to liabilities for incurred claims			-	-
Investment components	-		-	-
Insurance service result	- 845	-	100	- 745
Insurance finance expenses	2,769	-	-	2,769
Total changes in the statement of comprehensive income	1,923	-	100	2,023
Cash flows	372,657	-	100	372,557
Premiums received	380,263			380,263
Claims and other expenses paid		-	100	- 100
Acquisition cash flows paid	- 7,605			- 7,605
Insurance contract liabilities	374,581	0	0	374,581

Process and workflow – RiskAgility FM IFRS 17 Calculation Engine in context

RiskAgility FM IFRS 17 Calculation Engine can work as a desktop calculation engine or seamlessly integrates with Unify, Willis Towers Watson's workflow management system, automation and systems integration solution. Unify activities will dynamically feed/map the engine outputs to interfaces of your reporting and accounting systems and we then provide you with our generic chart of accounts to let you achieve a reporting and accounting view according to your specific needs. *Figure 6* illustrates where RiskAgility FM IFRS 17 Calculation Engine fits into your system architecture.

"Intuitive, transparent, flexible and well-governed. RiskAgility FM IFRS 17 Calculation Engine supports the analysis, review, reporting, validation and analysis of change required to deliver IFRS 17 efficiency."

Figure 6: **End-to-end integration of RiskAgility FM IFRS 17 Calculation Engine by Unify**

Integration framework

Unify

DataValidator

IFRS 17 engine

DataValidator

Unify

Source cashflow systems and data warehouses

Detailed data

Input data structure by UoA

Accounting system

Output data feeds

Financial reporting system

Unify
Further extension of Unify integration to the actuarial cashflow production

Tool access e.g. through desktop applications of the RiskAgility FM IFRS 17 Calculation Engine, DataValidator and/or Unify web interface

Unify
Further extension of Unify integration to the business planning and forecasting

Delivering the Willis Towers Watson experience through RiskAgility FM IFRS 17 Calculation Engine

Our focus on innovation, together with our comprehensive consulting and technology services, ensures we are best placed to support you in the delivery of the requirements of IFRS 17.

- **Life technology leaders:** Our comprehensive suite of Life technologies include market-leading cashflow modelling, data transformation, validation and workflow solutions. Each one can be easily integrated to provide complete end-to-end IFRS 17 solutions.

- **Risk Management experts:** Our IFRS 17 technology services are based on our unique on-the-ground experience acquired through our own actuarial consulting and outsourcing business. We therefore fully understand your challenges and address those through our product innovation cycle to ensure our services continue to meet your demands and those of the IFRS 17 standard.

- **Range of support options:** We can provide a wide range of support, from IT solutions to help you integrate RiskAgility FM IFRS 17 Calculation Engine into your existing technology landscape, to technical and practical usage of RiskAgility FM with wider actuarial expertise to help users maximise the solution's capabilities.

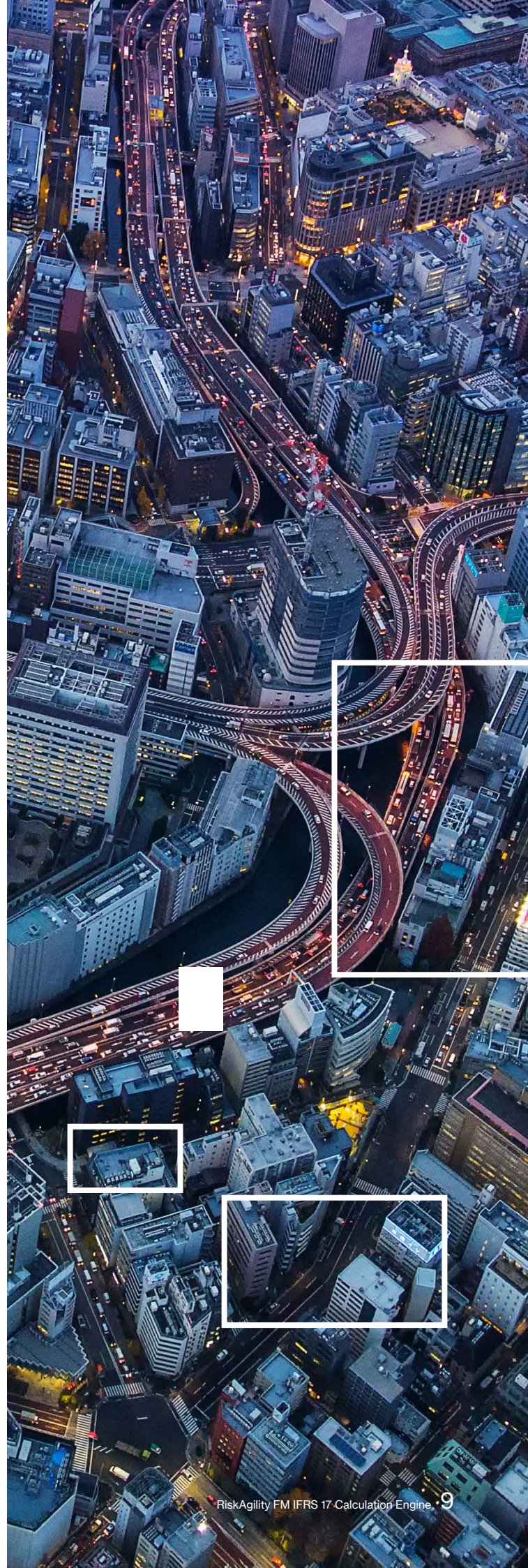## Further information

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About Willis Towers Watson

Willis Towers Watson (NASDAQ: WLTW) is a leading global advisory, broking and solutions company that helps clients around the world turn risk into a path for growth. With roots dating to 1828, Willis Towers Watson has 45,000 employees serving more than 140 countries and markets. We design and deliver solutions that manage risk, optimise benefits, cultivate talent, and expand the power of capital to protect and strengthen institutions and individuals. Our unique perspective allows us to see the critical intersections between talent, assets and ideas — the dynamic formula that drives business performance. Together, we unlock potential. Learn more at willistowerswatson.com.

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