

# End-User Computing (EUC) Governance

## Attaining a Suitable Control Framework for Manual Models

Barry Murphy, FSAI  
Karl Murray, FSAI  
Eamonn Phelan, FSAI



Manual models and processes are sometimes unavoidable; thus, where these are present in a reporting framework, (re)insurers should take care to ensure that sufficient controls and governance are in place to mitigate the risks associated with such models.

With the introduction of Solvency II and IFRS 17, model governance is rapidly becoming a key area of focus for the insurance world. Driven by the increased complexity which now inherently exists within reporting frameworks and the shrinking deadlines by which financial figures need to be reported, companies are more than ever looking to increase efficiency and controls within their reporting processes and frameworks.

A notable area of concern for undertakings is manual spreadsheet calculations and other manual models which are typically embedded within the financial reporting and decision making process. Habitually, many of the mathematical tools we use are designed in off-the-shelf software such as Microsoft Excel or Microsoft Access. Such application packages are robust and easy to use, however, do not guarantee that the information produced by them is accurate, reliable and fit-for-purpose and, typically these types of software do not contain a sufficient level of formally-defined controls and support functions.

Regulatory bodies have been vocal in this area in recent months. The Central Bank of Ireland (CBI) in particular recently carried out a review of the solvency capital requirement (SCR) calculations for a number of life insurance companies. One of the findings of this review indicated that undertakings had inadequate controls and testing in place when it came to manual spreadsheets. The CBI also noted that there were a number of instances where models had been updated with incorrect parameters, which led to an incorrect statement of the SCR.

### What is an EUC governance framework?

An end-user computing (EUC) governance framework defines a series of complementary controls and processes within a system of manual models to help ensure that the resultant

output is accurate, reliable and fit-for-purpose. The framework exists so users of such manual models (typically known as “End-Users”) are sufficiently informed, supported and identifiable within a financial modelling environment. Without an effective EUC governance framework companies are exposed to a higher degree of model risk, which could lead to the misstatement of financial figures for public reports, or fines from regulatory bodies as a result of non-compliance.

EUC typically refers to spreadsheet models, databases and programming language algorithms which have been built for a specific business purpose. Such tools may not contain a sufficient level of formally-defined controls and documentation. An EUC governance framework is designed to assist end-users of such models.

The aims of an EUC governance framework are to:

- **Identify all EUC models** within a computing framework or reporting process
- Make manual models **more user-friendly** and thus to minimise risk of misunderstanding in the preparation of reporting information
- Ensuring adequate and consistent **documentation** across EUC applications
- **Minimise errors** by defining adequate and transparent control processes within manual models
- Ensure manual models are reliable and provide credible output through continuous cycles of **review and validation**
- Embedding **appropriate processes** for managing the EUC suite of models on an ongoing basis
- Create a transparent **audit trail** for those who update, implement and review manual models
- Identify and define the **level of risk** inherent in a system of manual models
- Provide **consistency across manual models** within the company / reporting framework

Actuarial software packages, such as our own MG-ALFA, are typically out of scope as these platforms would ordinarily contain specific embedded controls and audit infrastructure, although the standards can still be applied to programming language code within these platforms.

Furthermore, the nature of such platforms - for example the lack of flexibility to edit the graphical user interface (GUI) - means that embedding EUC controls within such platforms can be challenging. The risks associated with such applications are normally managed by alternative governance frameworks.

At the time of writing, there is no established best practice for designing an EUC governance framework, nor is there much regulatory prescription or guidance on the subject. Therefore approaches are likely to vary between companies, and indeed within companies. This can lead to inconsistency in how manual models are governed within (re)insurance companies. The challenge therefore is to develop a set of EUC controls that are proportionate to the needs of the company and consistent across each department.

To exacerbate this challenge, the number and complexity of models within a reporting framework has likely grown as a result of recent changes in insurance regulation (for example with the introduction of Solvency II and IFRS 17). It is thus important to ensure that the standard of model governance increases to meet the increased supply, complexity and interconnectivity associated with the manual models within these processes.

## Managing & mitigating risk associated with EUC tools

EUC governance is a key practice within companies as a way to control and minimise risks associated with manual and ad-hoc models used for financial reporting.

Examples of manual models include:

- Financial projection models developed in Microsoft Excel, Microsoft Access or programming languages where the code can be executed directly (e.g. R, SAS, VBA, SQL)
- Out-of-model adjustments in respect of outputs from actuarial software packages or automated processes
- Summary / 'read-in' modules which consolidate information from other models
- Other manual models which support the reporting process (for example experience investigations models built in Microsoft Excel, Microsoft Access or programming languages where the code can be executed directly)

Such models are susceptible to model risk (i.e. the risk that the model does not perform as intended) due to the lack of formally defined controls, process documentation and audit trail functionality. Model risk can arise in such tools due to the lack of oversight in respect of model changes, or the improper updating of input data or assumptions due to lax documentation or confusing design. In recent years, there have been a number of high-profile examples where manual spreadsheets have failed due to simple errors, resulting in financial and reputational loss for the organisations in question.

An EUC governance framework is an integral part of any company's risk management system, especially for (re)insurance companies which commonly use manual models for reporting financial purposes. An EUC framework assists with the day-to-day management of risks associated with updating and using manual models, and is thus an important part of the 'first line of defence'.

FIGURE 1: THE EUC CONTROL FRAMEWORK



## Where can an EUC framework be used to help mitigate model risk?

An EUC governance framework can assist in mitigating model risk in respect of any reporting processes where manual models are used. For example, the following processes commonly make use of manual models:

- SCR calculations (e.g. counterparty default risk, concentration risk, spread risk, operational risk, models implementing other prescriptive simplifications methods, aggregation tools, QRT preparation)
- Risk margin calculations
- Tax asset and liability calculations
- Reinsurance calculations
- Disclosure and illustration tools in respect of PRIIPs
- IFRS 17 calculations

The scope of EUC extends well beyond the realm of financial reporting, which is the main focus of this briefing note. It is therefore important to recognise that the challenges posed by EUC applications are likely to apply across all aspects of an undertaking's business model, and not just to financial reporting. An EUC governance framework is therefore also relevant for Solvency II Pillar 2 in respect of the ORSA modelling, for example.

## How Milliman can help

As the modelling landscape becomes ever more complex, there is a vital need to be smarter and more efficient in all aspects of the reporting process. EUC governance is just one aspect of the overall theme of model industrialisation and process improvement, which is driven by various forces within the insurance industry, such as enhanced pressures from the CBI and auditors in respect of implementing adequate process controls and documenting audit trails.

Our consultants have a wealth of expertise in model governance and process improvement. This includes:

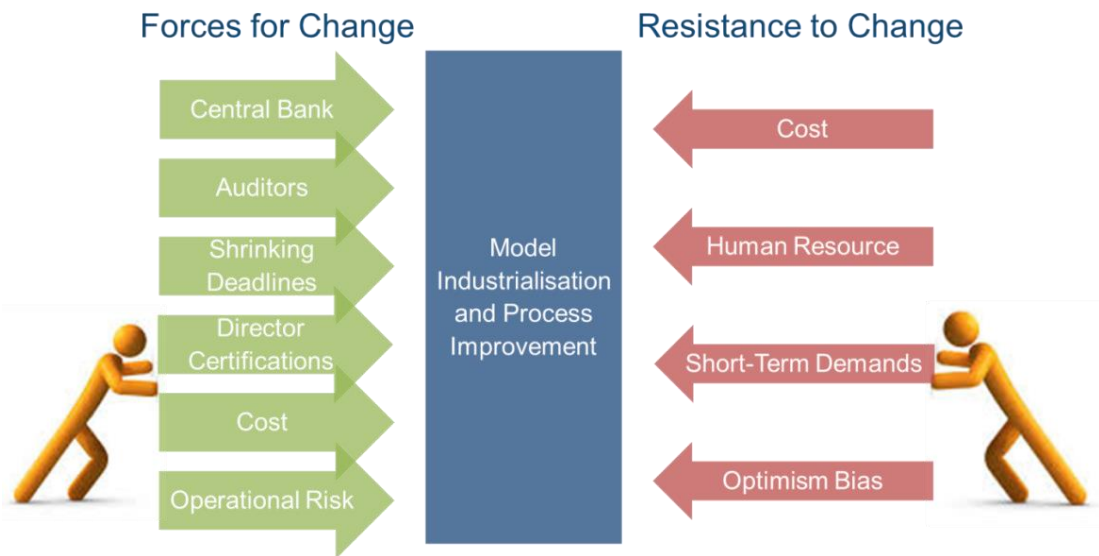
- Experience in assisting companies embed End-User Computing Standards
- Extensive experience of modelling projected balance sheets, technical provisions and capital requirement calculations
- Experts in risk management and operational risk modelling
- Experts in professional software development

As a result, we have a wide range of experience that can be brought to bear to benefit your business.

Milliman also has a range of software available to support companies in the automation of manual processes including:

- Milliman Integrate®: A suite of products that provide an industrial platform for actuarial modelling for life, health, and annuity insurers ([link](#))
- Milliman Star Solutions - Vega®: An automated Pillar 3 reporting and standard formula aggregation system ([link](#))
- Milliman Star Solutions - Navi®: A liability proxy modelling tool ([link](#))
- Solvency II Compliance Assessment Tool ([link](#))

For more information contact your usual Milliman contact or one of the contacts listed below.



Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

[milliman.com](http://milliman.com)

### CONTACT

Barry Murphy  
[barry.murphy@milliman.com](mailto:barry.murphy@milliman.com)  
Office: +353 1 647 5503

Karl Murray  
[karl.murray@milliman.com](mailto:karl.murray@milliman.com)  
Office: +353 1 647 5509

Eamonn Phelan  
[eamonn.phelan@milliman.com](mailto:eamonn.phelan@milliman.com)  
Office: +353 1 647 5914