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IMAP – Practical Issues & Lessons Learned

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Agenda

Interactive session to share experiences around the IMAP process.

Discussions around key aspects Pre and Post the application process.

- Planning your IMAP programme
- Independent validation (developing an internal validation process)
- Documentation
- Impact of Brexit

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Your presenters today

- Ashish Kwatra
- Jennifer Khaleghy
- Laurence Dunkling

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Symbols explained

Scroll =
SII Regulation

Yellow Post-It Note = Lesson learnt

Action Button =
Practical guidance for implementation

Star =
Best practice

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Planning your IMAP programme

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How long is the journey?

Compared to Continental Europe, UK firms generally had the advantage of an existing ICA model which forms a good starting point in the transition to an internal model. However, a long journey is still required to meet all the IMAP requirements.

Based on what we have seen across the market, UK firms typically spend minimum 2 years but could be as many as 5 years intensively preparing for an IMAP submission.

A comprehensive gap analysis of the model, documentation and underlying processes should be done at the very start to develop a more accurate view of the time and resources required.

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Effective planning

Invest time in careful planning at the start, using appropriately experienced and qualified resources, before starting the implementation phase of the project. This will avoid extra costs and delays in the long run.

- The initial stages of your project requires a small number of people who fully understand the requirements and have experience in implementing all aspects of the programme.
- **Gap analysis**
  - The level **of modelling effort** required to transition from a pre-existing capital model to a Solvency II internal model.
  - The extra level of **technical documentation** required, including extensions to existing documentation and new documents.
  - Any new **non-technical documents** or **underlying processes** which need to be developed.

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Key deadlines

There are key deadlines which should be allowed for in the planning process. Plan carefully and allow contingencies to ensure you have sufficient time to meet all the deadlines.

- There is usually a very short timeframe between finalising the model results, performing independent validation, getting through all the governance processes around the internal model, and the IMAP submission deadline.
- Each deadline will involve a significant level of governance from peer review all the way to the Board approval.

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Regular interaction with the regulator

Overall, it is very helpful to take a proactive approach with the regulator. This will reduce surprises later on which may delay or even jeopardise approval.

- Agree the scope of the internal model in terms of what business units and risks are included in advance.
- If you have a partial internal model, agree in advance those parts modelled using Standard Formula, as well as the exact partial internal model integration technique to be used, because there is some debate around the interpretation of some of these prescribed techniques.
- It is helpful for the regulator to understand the key risks areas and key expert judgements in advance, so they can develop a feel for the areas they want to focus on in their review.

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Pre-application process is crucial

The pre-application process is a chance for the regulator would give you feedback on your readiness for a formal application and recommend areas of further work. It is important to allow sufficient time between pre-application and formal application, due to the inevitable remediation activity which will be set out in the PRA feedback letter.

No hard rule as to what needs to be included in the pre-application submission. In our experience it is good practice (and often required) to submit the following:

- **Core policies** including model governance policy, model change policy, and model validation policy
- Key risk area documentation (e.g. dependencies)
- **One full cycle of independent validation**. (including remediation plan)
- Evidence of Board engagement, oversight and challenge of all aspects of IMAP preparation
- Internal Model Output template
- **CAP** (even if it is only partially completed or with placeholders)
- Deviations from the industry standard approach

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Prepare for an intensive review process

The work is not over after submitting your IMAP – expect ongoing questions and remediation activities.

- You can almost certainly expect a lot of questions as part of the regulatory review process. This can include almost anything – technical risk area questions, governance related questions and even requests for meeting minutes.
- Expect some form of feedback (as part of pre-application and final application) which requires remediation work. It is very rare, even if you are successful with your model approval, to be given a clean bill of health.
- You may well be expected to come up with a formal remediation plan in order to action specific areas of improvement which have been identified by the regulator as part of their review process.

Overall, there is still a lot of work to do following the final application. The effort and resourcing required should not be underestimated for this after phase.

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Independent Validation

What does it mean in practice

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Key requirements to meet

In order to demonstrate a credible validation process, all these requirements should be met from the initial stage of validation. Otherwise you could waste a lot of time (i.e. months) which would jeopardise the IMAP timeline.

- Independence
- Validation policy
- Test plan with clear pre-defined pass/fail criteria before carrying out the validation
- All areas and aspects of the internal model validated
- Using a wide range of validation tools
- Skilled and knowledgeable validators
- Effective challenge, reporting, escalation, remediation and monitoring process
- Board's role in validation

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Independence

L2 Article 241 (2)

In order to ensure independence of the model validation process from the development and operation of the internal model, the persons or organisation unit shall, when carrying out the model validation process, be free from influence from those responsible for the development and operation of the internal model.

- Design
- Build
- Development
- Parameterisation
- Expert judgements
- Peer review
- Running
- Governance process

L2 Article 241(4)

- *No overlap in reporting lines*
- *Remuneration structure*

Change validators on a regular basis

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Validation policy

L2 Article 241 (3)

For the purpose of the model validation process insurance and reinsurance undertakings shall specify all of the following:

(a) the processes and methods used to validate the internal model and their purposes;

(b) for each part of the internal model, the frequency of regular validations and the circumstances which trigger additional validation;

(c) the persons who are responsible for each validation task;

(d) the procedure to be followed in the event that the model validation process identifies problems with the reliability of the internal model and the decision-making process to address those problems.

- Purpose of validation with high-level confirmation statements
- Roles and responsibilities of all the people involved in the validation process
- Frequency of validation
- Triggers for additional ad-hoc validation
- Scope of validation
- Validation tools to be used
- Selection of skilled and independent validators
- Materiality thresholds
- Validation reporting
- Governance process and escalation path
- Limitation remediation and monitoring process
- Validation policy review frequency

An example of test plan

- Validation area
- Validation tool
- Description of the validation test
- Purpose of the validation test
- Pre-defined pass/fail criteria
- Frequency of performing the test
- Triggers for additional ad-hoc validation
- Date of performing the test
- Name of the validator
- Model version/calibration date
- Test results and justification
- Limitation identified
- Materiality of the limitation
- Justification for assigned materiality
- Recommended remediation action
- Evidence used
- Location of the evidence

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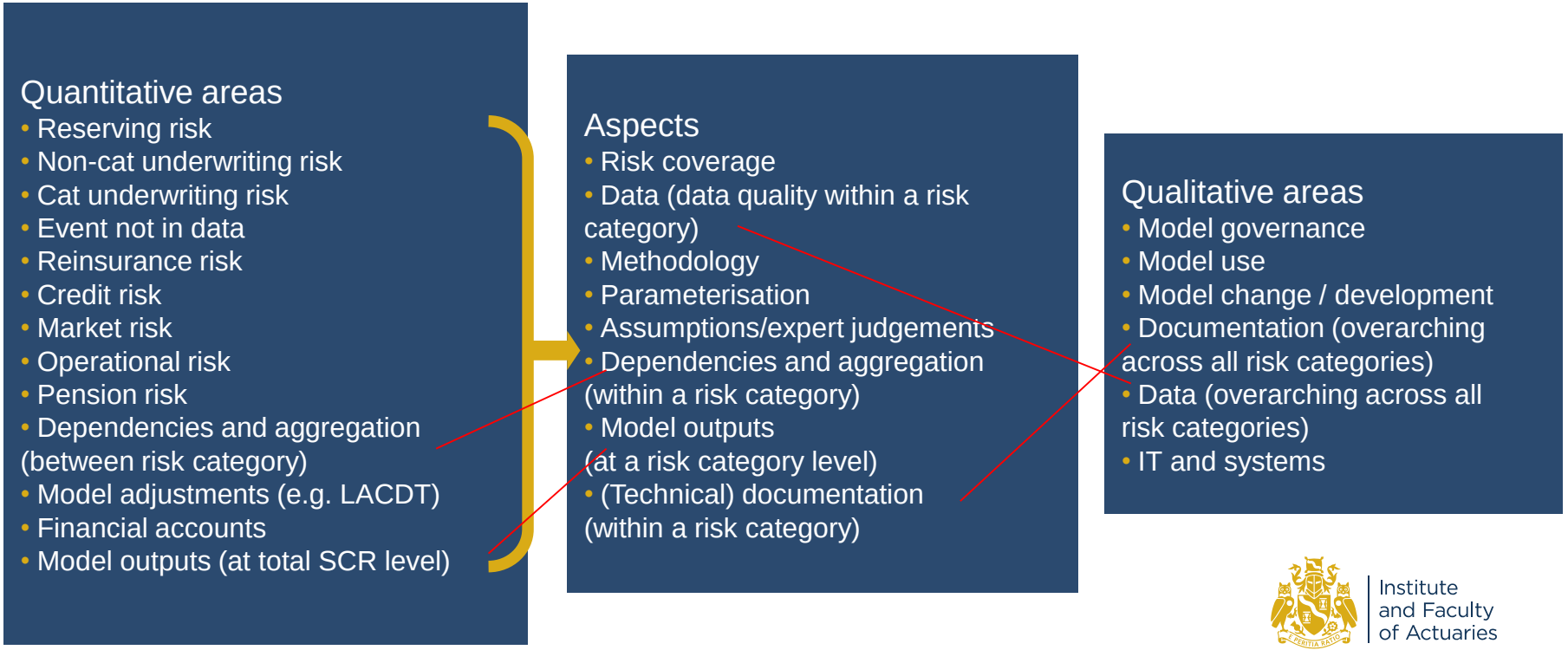
Areas and aspects to be validated



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Validation tools

Validation tools under L2 Article 242
- *Reverse stress testing*
- *Profit and loss attribution*
- *Sensitivity testing*
- *Back testing*
- *Stability testing*

Other SII Regulation
- *Stress and scenario testing [L2 Article 259(3)]*
- *Risk ranking [L1 Article 121; L2 Article 232]*
- *Top down validation [PRA SII Directors' Update letter, dated 12 Mar 2015]*
- *Comparison to standard formula [L1 Article 51(1)(e)(iv); L2 Article 297(4)(e)]*
- *Analysis of change [L2 Article 297(2)(h)]*

Other validation tools
- Benchmarking (comparison to industry or internal benchmarks)
- Functional testing
- Qualitative expert review

Simulation analysis or analysis of biting scenarios

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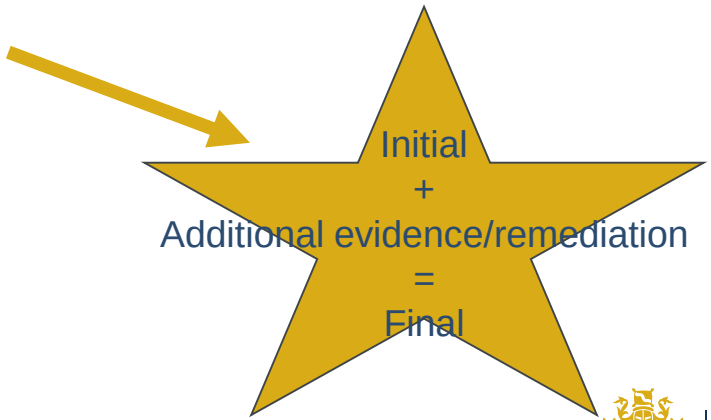
Selection of validators

Criteria	External	Internal
Independence	Automatically assumed, unless there is evidence suggesting otherwise	Onus of proof lies on the firm
Skills and experience	Understand SII requirements, industry common/best practice, industry benchmarks, and latest regulatory focus	Often hard to find skilled (and independent) internal resources, especially in a small firm
Cost	Costly, especially big consultancies	No or low additional cost
Value adding	More effort needed to avoid one-size-fit-all validation approach not sufficiently tailor to the firm's internal model, risk profile and needs	A deeper knowledge of the firm, but often lack industry/regulatory experience to add as much value into the validation process
Efficiency	No daily face-to-face interaction with the firm, often making the challenge/Q&A process long and inefficient. A steep learning curve often required at the beginning to understand internal model and the processes.	Daily face-to-face interaction with Line 1, making the challenge/Q&A process efficient/streamlined. Internal resources often have some knowledge about the internal model and the processes already.
Timing issue	Often multiple projects going on at the same time. Any delay in their other projects or in the delivery of validation evidence from the firm to the external consultants may cause a timing issue. This would likely reduce the quality of the validation.	•Some internal resources, usually in a big firm, are solely dedicated to the validation, and therefore can accommodate the timing of Line 1. •Some internal resources, usually in a small firm, have other job responsibilities and can face similar timing issue as external consultants. However, the firm has the advantage of having the control to re-prioritise internal resources' responsibilities without reducing the quality of the validation.

Effective challenges

- Directly related to the skills and experience of the independent validator
- Ensure that the validation process becomes more value adding than a box-ticking process
- Appraising the quality of the evidence, rather than merely confirming the existence of the required evidence
- Able to evidence the challenges which took place



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An example of validation report

1. Introduction
1.1 Purpose of validation
1.2 Scope of validation
1.3 Independence of validation
1.4 Validation process and approach
1.5 Materiality and proportionality
1.6 Limitation of our work

2. Executive Summary
2.1 Confirmation statements
2.2 Key strengths
2.3 Key weaknesses
2.4 Summary of validation results
2.5 Summary of findings and remediation
2.6 Next steps

3. Validation tests and results

4. Appendix
4.1 Test plan
4.2 Rating criteria/materiality threshold

For each test, document
- Evidence provided
- Evaluation of the evidence
- Challenges
- Test result and justification
- Limitation identified
- Materiality of the limitation
- Recommended remediation

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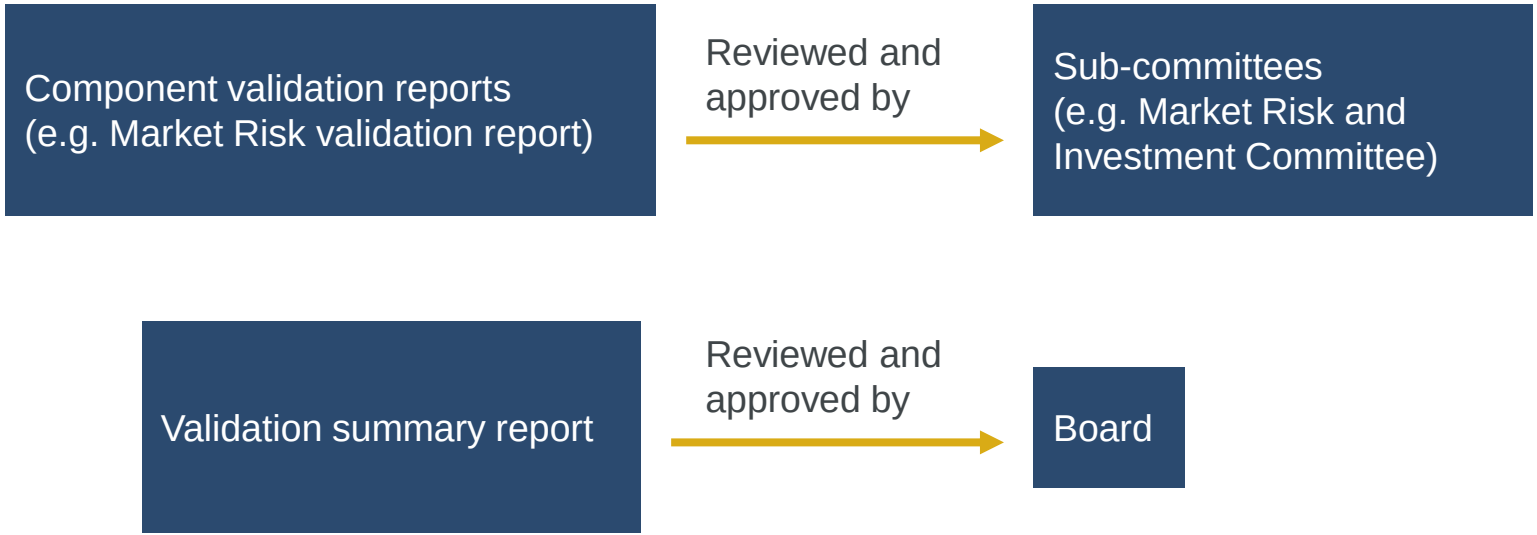
Governance of validation report



Escalation

Escalation to the Board (or sub-committee) could happen for various reasons at various stages of the validation process. For example:

- Unable to find appropriate internal resources to carry out validation
- External consultancies cost related issues
- Line 1 unable to deliver validation evidence in line with the validation work plan
- Material limitations identified through validation
- Line 1 remediation work not in line with remediation work plan

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Remediation and monitoring process

Line 1 Remediation Plan
- Remediation action
- Action owner
- Target remediation timeline

Review and approval by the Board

Remediation progress is formally monitored and tracked, with issues escalated.

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Board's role in the validation process

PRA SII Directors' Update letter, dated 12 Mar 2015

- *Effective review and challenge of the internal model, in particular its key assumptions, drivers, limitations and outputs ("top down validation")*
- *Challenge the validation process and its results*
- *Monitoring the remediation process*

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Common mistakes

Common mistakes observed across the industry:

- Outsourcing validation activity does not mean transfer of ownership and accountability of the process or the results
- Not fully meeting the independence requirement
- Validators not sufficiently knowledgeable about capital modelling and/or SII regulation
- Box-ticking type of validation, merely confirming the existence of the required evidence, instead of appraising the quality of the evidence
- Inconsistency between internal and external validation
- Not validating the full internal model, especially qualitative areas

How many cycles of validation are required prior to final application?

- For pre-application, the PRA requires, at a minimum, one **full cycle** of independent validation, covering every aspect of the internal model. This includes demonstrating ongoing remediation activity for the issues identified.
- Between the pre-application and the final application, a new full cycle of independent validation is normally expected to take place, focusing on model changes and remediation activities between pre-application and final application.

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How to make BAU validation less resource intensive?

Not all the tests need to be performed every single year	It is up to the firm to decide and justify how often to execute a particular test or validation area. The test frequency should be clearly set out in the test plan and/or validation policy, with triggers for additional ad-hoc validation defined.
Validation can be focused on changes made to the internal model since the previous validation	If there has been no change and the previous validation passed without limitation, there is an argument of skipping it this time around.
Not all the validation tests need to be performed at once	Different validation areas can be validated in different quarters of the year to spread the work over a period of time.
Firms with generous IT support may consider automating parts of the validation process	• Challenges from the validators and the corresponding responses are automatically recorded to generate efficiencies and give clear evidence of challenge. • Progress monitoring tool • Reporting tool

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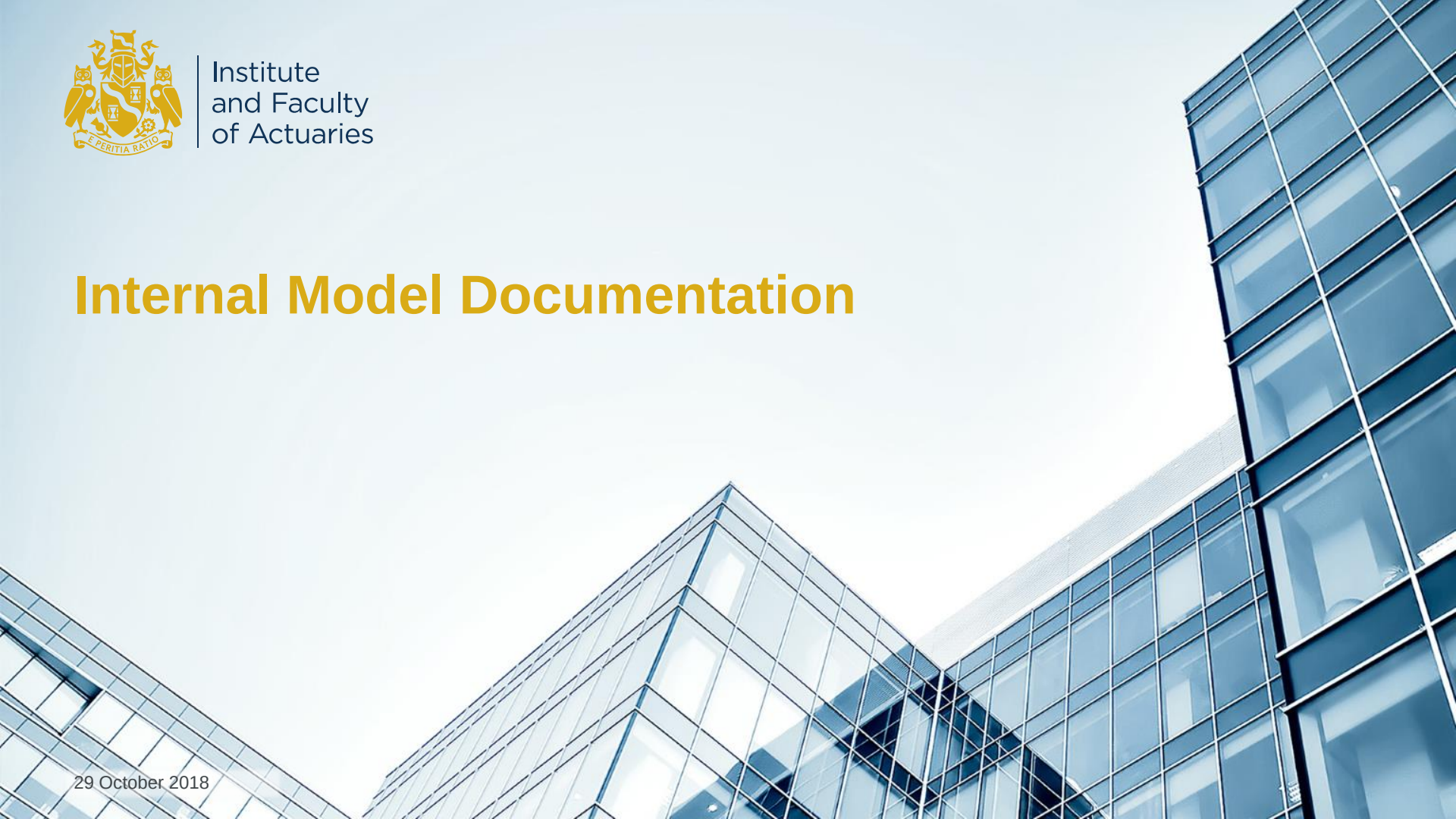
Internal Model Documentation



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Documentation – key challenge for model approval

The breadth and quality of documents required for an IMAP has been one of the biggest challenges in transitioning from an ICAS regime.

- Many companies, even those with model approval, continue to explore ways of managing their documentation more efficiently on an ongoing basis.
- From our experiences across the market, the key is to develop a suite of documents (and underlying processes) which is not only regulatory compliant, but manageable in the long term and fits into the overall governance structure of the organisation.
- This section offers a practical insight into the most important, yet often challenging, documents required for IMAP.

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The starting point – a documentation framework

The level of effort and resources required in order to develop Solvency II compliant documentation is often underestimated.

A clear documentation framework can be used to help managing your IMAP programme and also as a way of articulating the full suite of documents to the regulator.

- The Common Application Package (**CAP)** is a very useful starting point to plan what documents need to be produced. Separate the CAP requirements into distinct categories (e.g. calibration, methodology, data, systems, model use...) and then try to allocate documents for each category, ensuring all requirements are satisfied.
- Having come up with a list of documents, this can then be used to form the basis of a **documentation framework**. The documentation framework should include a full list of documents (a so called “inventory of evidence”).
  - Sets out the purpose of each document
  - Show these all link together, to ensure the requirements are appropriately satisfied. These are often illustrated using documentation trees.
  - The documentation structure as whole, can be used to organise the IMAP programme and also demonstrate a clear thought process to the regulator.

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Technical risk area documentation

The most time consuming documentation tends to be the technical risk area documents.

Important aspects to consider are:

- The **structure** of the documents.
  - Some companies prefer an end-to end document for each risk area, covering all relevant aspects (e.g. data, methodology, parameterisation, expert judgements, limitations, etc.).
  - Alternatively you can split documentation into “static” and “non-static” elements.
- A good document should **map to Solvency II requirements**.
- A **good executive summary** can be a powerful and transparent way of communicating key messages.
- The materiality of all **expert judgements and limitations** should be determined and a proportionate approach should be used to justify and assess them.

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Other key but challenging technical documents

There are other technical documents required for Solvency II which have proved to be very challenging.

- **External models** – The level of external model documentation should commensurate to the materiality of the relevant risk area
- **Dependencies** - This tends to be a material element of any model and will need to be documented appropriately.
  - This includes *correlations within a risk area* and *correlations between risk areas*. The former may be included as part of the risk area documentation and the latter may be documented in a separate Dependencies report.
  - The level of justification should again be proportionate, with consideration of historical data, benchmarking (external and standard formula), and a robust expert panel process.

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Other key but challenging technical documents

- **Model outputs** – This involves analysis of model outputs at a more holistic level, via change analysis, P&L attribution, simulation analysis, stability testing, stress and scenario testing, reverse stress testing, etc., all carried out at an overall level.
  - This ensures that once all components of the model are aggregated together, the overall results are appropriate.
- **Balance sheet –** This document would demonstrate:
  - Consistency of the modelled opening balance sheet with Reserving and Finance, with any differences in the valuation bases for assets and liabilities explained and justified.
  - No un-modelled balance sheet item which would have a material impact on the capital.
  - The calculation of the balance sheets at both time 0 and time 1 is performed consistently, in order to calculate the Own Funds movement over the year.

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Other key but challenging technical documents

- For a partial internal model, justification should be provided for your chosen **integration technique** from the five prescribed techniques per Annex XVIII of the delegated regulation.
- **Risk coverage report -** This should confirm that all material quantifiable risks are covered by the model, with justification for any excluded risks.
  - Importantly, you should ensure that all the identified exclusions do not aggregate to a material level, and are considered in the model development plan.
- **Future management actions plan** - This should justify all the modelled (and non-modelled) management actions, provide a description of how these are implemented in the model and in practice, and quantify their impact on capital.
  - All modelled management actions should be approved by the Board on an annual basis.

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Key non-technical documents

There are other key non-technical documents.

- It is common practice to have a **model scope** document which provides a high level overview of components (e.g. risks, entities, business units) included or excluded from the model, as well as a **model design** document which provides a high level overview of the overall methodology. Together, these documents can provide a good introduction to the model.
- **Model use** requirements are wide ranging. It is good practice to provide evidence of:
  - Specific model uses
  - Board training and involvement in the IMAP
  - Model users' awareness of key assumptions and limitations of the model, as well as any adjustment made to the model outputs, in order to make an informed decision.
- It is often helpful to have a model use document, which demonstrates the compliance with all model use requirements, supported by underlying evidence of model uses.

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Key non-technical documents

- Most models we have seen tend to be supported by a huge number of **policies and standards** and other related governance documents (e.g. definition of roles and responsibilities, terms of reference, charters, etc.).
- Based on our experience, the UK regulator tends to focus on a small number of core policies, namely expert judgement policy, model governance policy, model change policy, and model validation policy. All these core policies should be reviewed on an annual basis.
- A **data governance framework** around both internal and external data used in the model should include a data policy, a data directory, data lineage diagrams illustrating data transformations and controls around them, data quality assessments, data limitations identified and a remediation plan.
- There are many more non-technical documents to think about, such as the **systems & IT infrastructure, adequacy of resources and internal model controls**.

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The end point – a strong cover letter

One of the key documents required to support the application is a cover letter. The requirements around the cover letter are specified in Article 2 of the Implementation Technical Standards.

- We have seen varying approaches to the cover letter. Some companies kept this quite brief (e.g. a few pages to hit the core requirements), whereas other companies have taken a more detailed approach.
- There is no right or wrong answer here. However, often being the first document to be reviewed, the cover letter can be a good opportunity to communicate key messages to the regulator, such as:
  - Risk profile of the company
  - A very high level overview of the model
  - Key model outputs and drivers of the capital
  - Key expert judgments and limitations
  - Responses to previous feedback from the regulator
  - Signposting of key documents

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Practical experiences of Brexit for an IMAP firm

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Practical experiences of Brexit for an IMAP firm

- London based pan European insurance group.
- Centralised European operations in 2013/14.
- Received partial model approval in early 2017 from PRA after four years preparation.
- Started working on new entity applications in late 2016.

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Selection of legal entity structure

The initial decision for the corporate entity structure focussed on the nature of various criteria.

- Transaction costs
- Tax costs
- VAT costs
- Diversification benefit loss
- Regulatory impact
- Incremental run rate
- Reinsurance opportunity

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Selection of jurisdiction

The initial decision for the location of the new entity also focussed on several key variables.

- Regulatory approach
- Regulatory capacity
- Presence requirements
- Capital/Reinsurance opportunities
- Staffing considerations
- Employment/Talent
- Data
- Tax
- Real Estate
- Softer factors
- Other peers
- Resilience to further EU breakup

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Regulatory submissions – UK / PRA

- The new entity formed part of European group. Despite the dissolution of the main European entity (95% of business) to be replaced with a new entity.
- A Major model change application was submitted.

Discussions focussed on:

- The level of diversification between the two entities.
- Calibration of lines at reduced volume levels. Some combined calibration still needed.

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Regulatory submissions – Europe / The CAA

- New entity and new application for full Internal Model.
- The wider Internal Model had to be considered. Duplication of staff as key roles for UK and Europe were required.
- Limited experience for regulator. Firm required to provide training on all areas of model.
- EIPOA pressure on CAA for centralised supervision.
- Duplication of documents – but all must be relevant to standalone entities.|

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Model structure

- Model built to maintain existing structure and new structures until end 2018
- Do we still require group calculation post 2019? Uncertainty of the final regulatory landscape meant that we allowed for this possibility.
- Dependency structures in the individual entities had to be re-examined to ensure only economic factors relevant to that entity was used.
- A composite index had to be created to correlate results up to group level.
- Extensive validation of both models.
- Training of Board members and EXCO required.

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Questions

Comments

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