

The logo consists of three white triangles of increasing size, arranged in a fan shape pointing towards the right. The text 'INSTITUT DES ACTUAIRES' is positioned to the left of the triangles.

INSTITUT DES
ACTUAIRES

www.institutdesactuaires.com

Éclairer les risques, tracer l'avenir

Update on Actuarial Standards development – Focus on new Standards on models

**3rd European Actuarial Journal
Conference & Summer School of the
French Institut des Actuaires**

Elsa Renouf - 7 Sept. 2016 – Lyon, France

Objective of actuarial standards setting

Article 48 of the Solvency 2 Directive on Actuarial Function:

2. The actuarial function shall be carried out by **persons who have knowledge of actuarial and financial mathematics,**
commensurate with the nature, scale and complexity of the risks inherent in the business of the insurance or reinsurance undertaking,
and who are able to demonstrate their relevant experience with applicable professional and other standards.

Objective of actuarial standards setting

Extract of Statement of Purpose on actuarial Standards settings by AAE:

The overriding purpose should be to serve the public interest by ensuring that the users of actuarial services benefit from a high quality of actuarial work. The principal purposes of AAE actuarial standards should be:

- to enhance the **quality of delivery of professional services** by actuaries;
- to help to ensure that the actuarial work product **meets the needs of users of actuarial services**;
- to enable actuaries to play an **enhanced role in the protection of policyholders** and beneficiaries through the quality of the advice given;
- to contribute towards **the development of consistency of actuarial practice** across the EU; and
- to provide **guidance to actuaries on good practice**

I – Update on Actuarial Standards development

II – Actuarial Standards on Models

ISAP 1A (Final Draft – expected 2016)

ISAP 5 (Final Draft – expected 2017)

NP 2 (Approved - French Standard)

I – Update on Actuarial Standards development

The different actuarial standards

IAA, AAE and local standards

International level: International Actuarial Association (Actuarial Standards Committee)

- *“ISAPs : International Standards of Actuarial Practice (ISAPs) are model standards for use by standard-setters around the world. [ESAPs for Europe where needed]”*
- *“IANs: International Actuarial Notes (IANs) are educational documents on an actuarial subject to advance understanding of the subject. A set of IANs may be developed in support of an ISAP. [EANs may be developed in Europe]”*

AAI :

63 000 actuaries
in **110** countries.

Site web

www.actuaries.org



IAA Standards (ISAPs):

- **Glossary** (approved)
- **ISAP 1** General Actuarial Practice (approved)
- **ISAP 2** Social Security (approved)
- **ISAP 3** IAS 19 (approved)

In progress:

- **ISAP 1A** Model Governance (close to final)
- **ISAP 4** Insurance Contracts IFRS (april 2019)
- **ISAP 5 & 6** ERM (5 is close to final)
- **ISAP 7** BCR & ICS Insurance Capital Standard IAIS (april 2018)

AAE (Actuarial Association of Europe)

- **Standards, Freedom and Professionalism Committee**
- **Standards Project Teams**

- **AAE: 21 000 actuaries in 35 countries**
- **Site web <http://actuary.eu>**



AAE's Standards (ESAPs)

- **ESAP1** General Actuarial Practice (=ISAP1, approved)
- **ESAP2** Actuarial Function Reporting (approved)
- **ESAP3** Actuarial practice in relation to the ORSA process under S II (under finalization)

In progress (not confirmed) :

- **ESAP4** The role of the AF in contributing to the RM system under S II (Early 2017)
- **ESAP5** Independent review by actuaries in the context of SII (Early 2017)
- **ESAP6** Governance of models (=ISAP1A?) (Mid 2017)
- **ESAP7** Actuarial Function Reporting for IORPs (Mid 2017)
- **ESAP8** Risk Reporting for IORPs (Mid 2017)

The different actuarial standards

IAA, AAE and local standards

Local Standards are developed by local association.

In France, the main committees are:

- The *Groupe de travail sur les Normes Actuarielles* (GTNA)

- Contribute to International and European consultations and workings
- Draft local standards (Transposition of International or European standards, including translation and development of specific standards)

- The *Commission Technique des Normes Actuarielles* (CTNA)

The committee reviews and approve submission of projects to the Board and ensure compliance with internal regulations.

- Ad-hoc working groups (ex. : GTFA on Actuarial Functions)

➤ Objectives for Actuarial Standards working parties

- Influence and contribute to the drafting of international and European standards with particular attention to how the standards could be transposed to the French context
- Contribute to the regulation transposition taskforce in particular in Solvency 2 context
- Protect Actuaries in their professional practice
- Formalise best practices and describe « state of art » methods for the actuaries's benefits
 - ✓ Contribute to education and training needs
 - ✓ Limit professional risks for actuaries

➤ Actuarial Standards review criteria

- When reviewing a Standards – attention is requires that the document
 - Can be understood
 - Is in line with current European and French regulation
 - Is in line with current approved Standards
 - Is logical
 - Is compared with current actuarial practices
 - Is consistent
 - Is useful
 - States any application conditions? (proportionality principle)
 - Others...
- NB : The draft standards need to be reviewed as if their application could become compulsory

Article 28 of the Institut des Actuaires Statuts

The 4 Actuarial Standards categories are (updated in 2014):

➤ **Category 1 – Compulsory**

- Application is compulsory
- If not respected, sanction following process described in the *Code de déontologie*

➤ **Category 2 – Voluntary**

- Application is not compulsory
- Only compulsory when the actuary is declaring applying the Standard

➤ **Category 3 – Recommended practices**

- Should be applied unless good explanation is given
- Comply or explain

Article 28 of the Institut des Actuaires

➤ **Category 4 – Education note**

- Education on recognised actuarial practices

➤ **Approval process**

- Draft from a technical committee, in general from the CTNA
- Consultation of the Institut des Actuaires members
- Publication of feedback and updated draft Standard
- Board approval for submission to the General Assembly
- Approval by the General Assembly
- Category change needs to follow the same process

➤ 2 category 3 Standards

- Approved - 15 juin 2015 :
 - **NPA 1** (Norme de pratique actuarielle générale – translation from ISAP 1)

http://www.institutdesactuaire.com/docs/2014094412_projet-de-norme-de-pratique-actuarielle1-20140915.pdf

- **NPA 2** (Specific local standard on actuarial models)

http://www.institutdesactuaire.com/docs/2014094433_projet-de-norme-de-pratique-actuarielle2-modeles-20140915.pdf

➤ and 2 category 4 Standards (education note)

- Approved - 17 juin 2016
 - **NPA 3** (guide pratique « Best Estimate Non Vie »)
 - **NPA 4** (guide pratique « Best Estimate Vie »)

II – ISAP 1A on Model Governance Final Draft

Section 1 - General

- Purpose – This ISAP provides guidance to actuaries on **model governance** when performing actuarial services involving models, to give intended users confidence that:
 - Actuarial services are carried out **professionally and with due care**;
 - The results **are relevant to their needs**, are **presented clearly and understandably, and are complete**; and
 - The assumptions and methodology (including, but not limited to, models and modelling techniques) used are disclosed appropriately.
- This ISAP addresses how modelling activities in which an actuary may be involved should be governed, rather than how these activities should be performed.
- Scope – This ISAP applies to all models **that support an entity's decision making**. It provides guidance to actuaries on appropriate model governance to manage the risks **inherent in selecting an existing model, modifying an existing model, developing a new model, or using a model**.

DRAFT ISAP 1A Overview - Extracts

- Section 2 - Appropriate Practices
 - **Overview – Model governance is important for all models**, from those using simple spreadsheets to those including complex simulations. The level of governance should be **proportionate** to the risks associated with inappropriate processes used in modelling.
 - The actuary involved in selecting, modifying, developing, or using models should:
 - Be satisfied that there is in place an **appropriate model risk management framework** that addresses identification of model risks, assessment of these risks, and appropriate actions to mitigate these risks such as adequate model validation, documentation, and process controls.
 - Be satisfied that an appropriate **model validation has taken place**. For the purpose of this standard, validation includes assessments that the:
 - ✓ Model reasonably **fits its intended purpose**.
 - ✓ Model **meets its specifications**; and
 - ✓ Results of the model can be appropriately **reproduced**.
 - The validation should be performed by a team that did not develop the model, unless to do so imposes a burden that is disproportionate to the model risk.
 - **Understand the context in which the model will be used, how model input will be provided, and how the actuary expects the results of the model will be used.**

Section 2 - Appropriate Practices

- **Selecting an Existing Model** – The actuary who selects an existing model (whether developed in-house or by a third party) should:
 - Understand the model.
 - Understand **the conditions under which it is appropriate for the model to be used**, including any limitations of the model.
 - Be satisfied that there is **adequate documentation** of the model construction and operation (including where appropriate scope, purpose, methodology, statistical quality, calibration, and fitness for intended purpose), and of the conditions under which it is appropriate to use the model, including any limitations of the model.
- **Modifying an Existing Model** – The actuary who modifies an existing model should:
 - Understand the model.
 - Document, as appropriate, the changes made to, and any material impact of the changes on, the model's scope, purpose, methodology, statistical quality, calibration, fitness for intended purpose, and conditions under which it is appropriate to use the model, including any limitations of the model.
 - Be satisfied that an appropriate change control process is in place for the model. A change control process avoids unauthorized changes to the model, documents any changes made, and allows any changes to be reversed.

Section 2 - Appropriate Practices

➤ **Developing a New Model** – The actuary who develops a new model should:

- Document, as appropriate, the model design, construction, and operation (including where appropriate scope, purpose, methodology, statistical quality, calibration, and fitness for intended purpose), and conditions under which it is appropriate to use the model, including any limitations of the model.

➤ **Using a Model** – The actuary who uses a model should:

- **Understand the model.**
- Be satisfied that **the conditions to use the model are met.**
- Be satisfied that there are **appropriate controls on inputs and outputs of the model.**
- Consider whenever the model is used, whether the validation should be redone in whole or in part.
- Understand and, if appropriate, **explain material differences between different runs of the model**, and be satisfied that there is an adequate control process for production runs. In the case of stochastic models, be satisfied that a sufficient number of runs of the model are made, and understand the material differences between different runs of the model.
- Understand and consider whether any changes to **management actions or responses assumed within the model** the model are needed.
- Document, as appropriate, limitations, inputs, key assumptions, intended uses, and model output.

● Section 3 - Communication

- **Disclosures** – In addition to complying with ISAP 1, the actuary should include in the actuary's report any disclosures that the actuary considers to be appropriate so that the intended users of the model or its results are able to understand the:
- **Limitations and uncertainties**, and their implications; and
 - **Management actions** or responses assumed in the model, and their implications.

II – ISAP 5 on ERM Models Final Draft

Section 1 - General

- Purpose – This ISAP provides guidance to actuaries when performing actuarial services involving enterprise risk models for insurers. It is expected to help increase public confidence in the ERM work provided by actuaries by giving intended users confidence that:
 - Actuarial services are carried out **professionally and with due care**;
 - The results are relevant to their needs, are **presented clearly and understandably, and are complete**; and
 - The **assumptions and methodology** (including, but not limited to, models and modelling techniques) used are disclosed appropriately.
- Scope – This standard applies to actuaries when performing actuarial services involving the selection, modification, development, and use of **enterprise risk models, including stress tests and scenario tests, to assess solvency, assess capital adequacy, and produce risk metrics for ERM programs of insurers.**

Section 2 - Appropriate Practices

- **Understanding of Risk and Uncertainty** – The actuary should have, or obtain, **sufficient understanding of the nature of risk and uncertainty** in relation to the subject of the work. In performing services related to risk assessment, the actuary should consider, or may rely on others who have appropriately considered, the following:
 - Information about the **financial strength, risk profile, business management, and risk environment** of the insurers that is relevant to the assignment;
 - Information about the insurer's **own risk management framework and approach**, including its attitude to the assumption of risk as relevant to the assignment; and
 - The relationship between the insurer's financial strength, risk profile, business management, and risk environment, and the insurer's risk management framework and approach. If, in the actuary's professional judgment, a significant inconsistency exists, then that inconsistency should be reflected in the risk assessment and disclosed in the report.
- **Proportionality** – In applying ISAP 1 paragraph 1.5. Reasonable Judgment, and in particular paragraph 1.5.2., the actuary should also consider proportionality in respect of the nature, scale and complexity of the underlying risks.

- **Section 2 - Appropriate Practices**

- **Assumption Setting** - When choosing or advising on the choice of assumptions for inclusion in the insurer enterprise risk model, in addition to following ISAP 1, the actuary should consider factors including, but not limited to, the following:
 - Internal policies, likely **management actions**, and experience with past history of management actions;
 - Contractual requirements, policy wording, and past experience;
 - Factors outside of management control, such as policyholder behaviour, taxation, regulatory requirements, and reserving requirements; and
 - **Risk mitigation techniques**, such as reinsurance and hedging, and any limitations to these techniques.
- The actuary's assumptions should normally reflect the actual situation as of the valuation date, modified for any **known or expected future changes**.
- When constructing or advising on the construction of insurer enterprise risk models, the actuary should be satisfied that the assumptions are reasonable by **obtaining information from appropriate sources**, such as:
 - Management of the insurer being modelled; Knowledgeable persons at the insurer; The insurer's business plan and, if available, the most recent assessment of how the insurer will function under severely adverse scenarios; External industry experts; Requirements of law; and Other subject matter experts.
- When probability distributions are incorporated into a model, the actuary should be satisfied that **the assumed distributions and correlations are appropriate relative to historical information and anticipated future changes, and should also consider the possibility of plausible extreme values**. In this regard, for each risk factor, the actuary should provide an explanation of the differences between the incidence of actual extreme events included in the historical data and the potential incidence of extreme events in the enterprise risk model. The various probability distributions and their related co-dependencies should recognize the possibility of simultaneous extreme values from multiple risk factors.

DRAFT ISAP 5 Overview - Extracts

- Section 2 - Appropriate Practices
 - **Stress Testing and Scenario Testing**
 - In relation to stress tests or scenario tests, the actuary should disclose:
 - The **significant assumptions used in the stress test or the scenario test**, including the actions assumed to be taken by management; and
 - **Any known limitations of the stress test or the scenario test** and include an assessment of the potential impact of these limitations on results.
 - **Assessing Consistency Among Models** – Multiple models and multiple stress tests or scenario tests are often developed for different purposes for the same insurer (e.g., accounting requirements, regulatory valuation, or risk evaluation to determine capital needs).
 - Where practical, the actuary should assess the reasons for and the impact of using multiple models and multiple stress tests or scenario tests and provide an explanation of any material differences in results.

- Section 3 - Communication

- **Disclosures** – In addition to complying with ISAP1 and ISAP1A, the actuary should disclose in the report:
 - Any significant **inconsistency** that exists between the insurer's financial strength, risk profile, business management, and risk environment and the insurer's own risk management framework and approach;
 - An explanation of the differences **between experience data and potential extreme adverse values** in the risk model;
 - An explanation of the differences between the experience data and the incidence of multiple extreme events in the enterprise risk model;
 - The **significant assumptions used in the stress test or scenario test**, including the actions assumed to be taken by management
 - Any known limitations of the stress tests or scenario tests and an assessment of the potential impact of these limitations on results ; and
 - An appropriate **explanation of any material differences** in results if multiple models and multiple stress tests and scenario tests are used by the insurer.

II – NP2 – French Standards on Models Approved 2015

- Design a Standard on actuarial models to ensure quality including over time, relevance and transparency of the models in line with the model uses.
- An actuarial model is defined as several calculations giving some results that can help decision making for an actuarial activity

- Model is relevant!
 - **good representation, validated, sound methods, as simple as possible, results can be reproduced**
- Focus Assumptions and Data used in the model
 - **Assumptions should be documented, governed, sound and account for the use of the model**
 - **Data should relevant, complete (including time wise), consistent, any data manipulation is explained and documented.**
- Reporting
- Tools (see next slides)

NPA 2 - Focus on the Tools section

Examples of discussion

- Should the scope be related to Solvency 2 regulation?
- Should there be recommendation on workbook/woksheets use?
- Should there be recommendation on calculation time?

NPA 2 - Focus on the Tools section

Examples of « must »

- Calculations can be understood by a knowledgeable third party
 - **Transparency and Documentation**
- Results can be reproduced
 - **Reproductability**
- Modifications are validated and recorded
 - **Audit trail**

NPA 2 - Focus on the Tools section

Examples of « should »

- Calculation time must be reasonable in consideration of the model use
 - **Performance**
- Coding/Programming framework
 - **Best practice**

Thank you!

Questions?

Elsa Renouf

Erenouf@scor.com