



cutting through complexity™

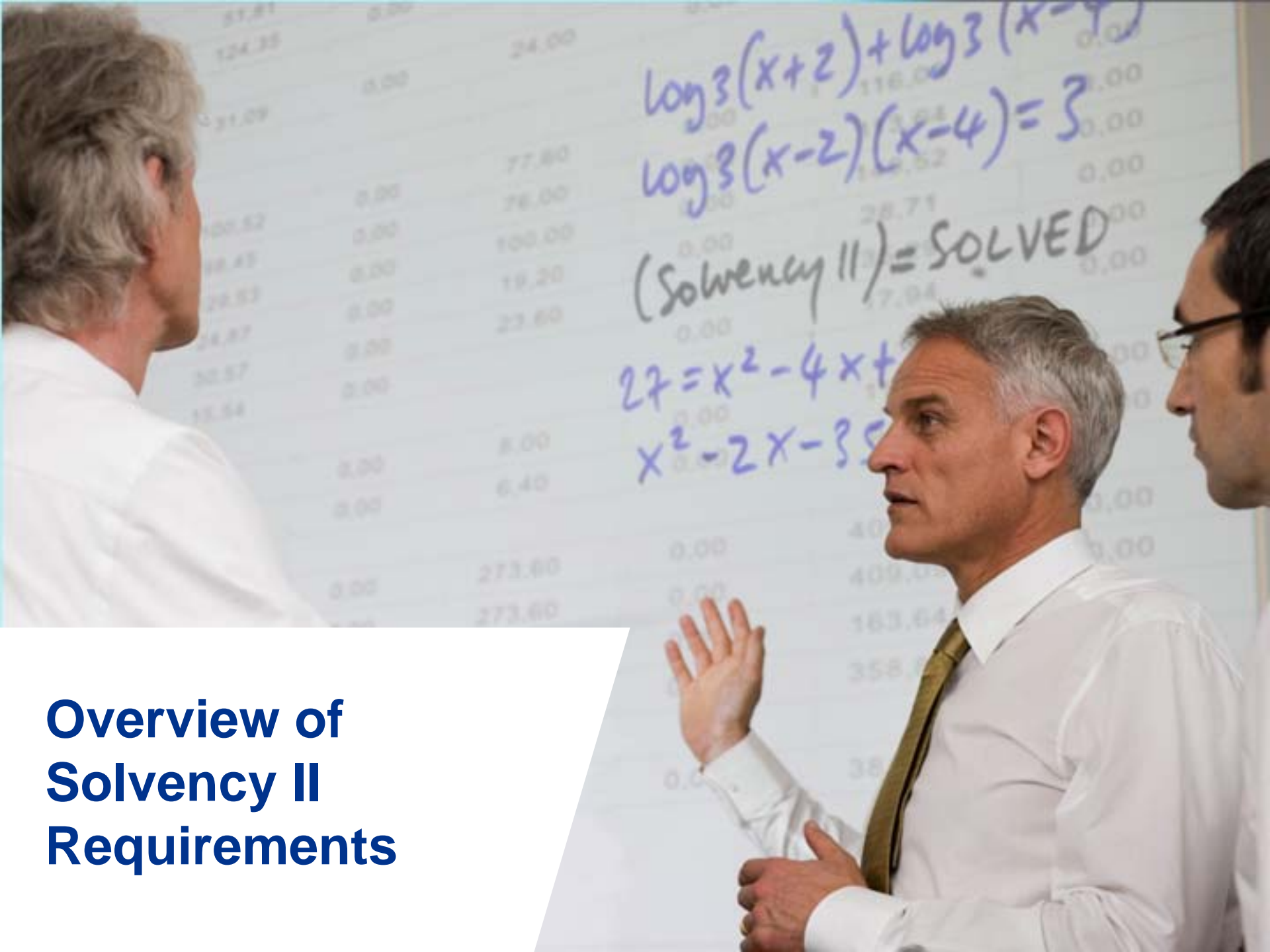
# The risk function and governance of the Internal Model

7 September 2011

$\log_2(x+2) + \log_2(x-4)$   
 $\log_2(x-2)(x-6) = 3$   
(Solving 11) is SOLVED  
 $2x + x - 4x + 2$   
 $x^2 - 2x - 25$



- Overview of Solvency II Requirements
- The risk function in a SII world
- Internal model validation
- Q&A



## Overview of Solvency II Requirements

# Risk management...



# Solvency II and the risk management function...

## *Article 44*

### *Risk management*

4. Insurance and reinsurance undertakings shall provide for a risk-management function which shall be structured in such a way as to facilitate the implementation of the risk-management system.

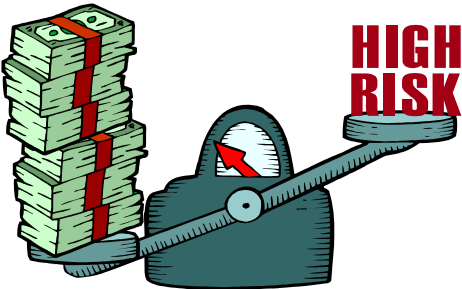
# ...risk management function and the internal model

## Article 44

### Risk management

5. For insurance and reinsurance undertakings using a partial or full internal model approved in accordance with Articles 112 and 113 the risk-management function shall cover the following additional tasks:

- (a) to design and implement the internal model;
- (b) to test and validate the internal model;
- (c) to document the internal model and any subsequent changes made to it;
- (d) to analyse the performance of the internal model and to produce summary reports thereof;
- (e) to inform the administrative, management or supervisory body about the performance of the internal model, suggesting areas needing improvement, and up-dating that body on the status of efforts to improve previously identified weaknesses.



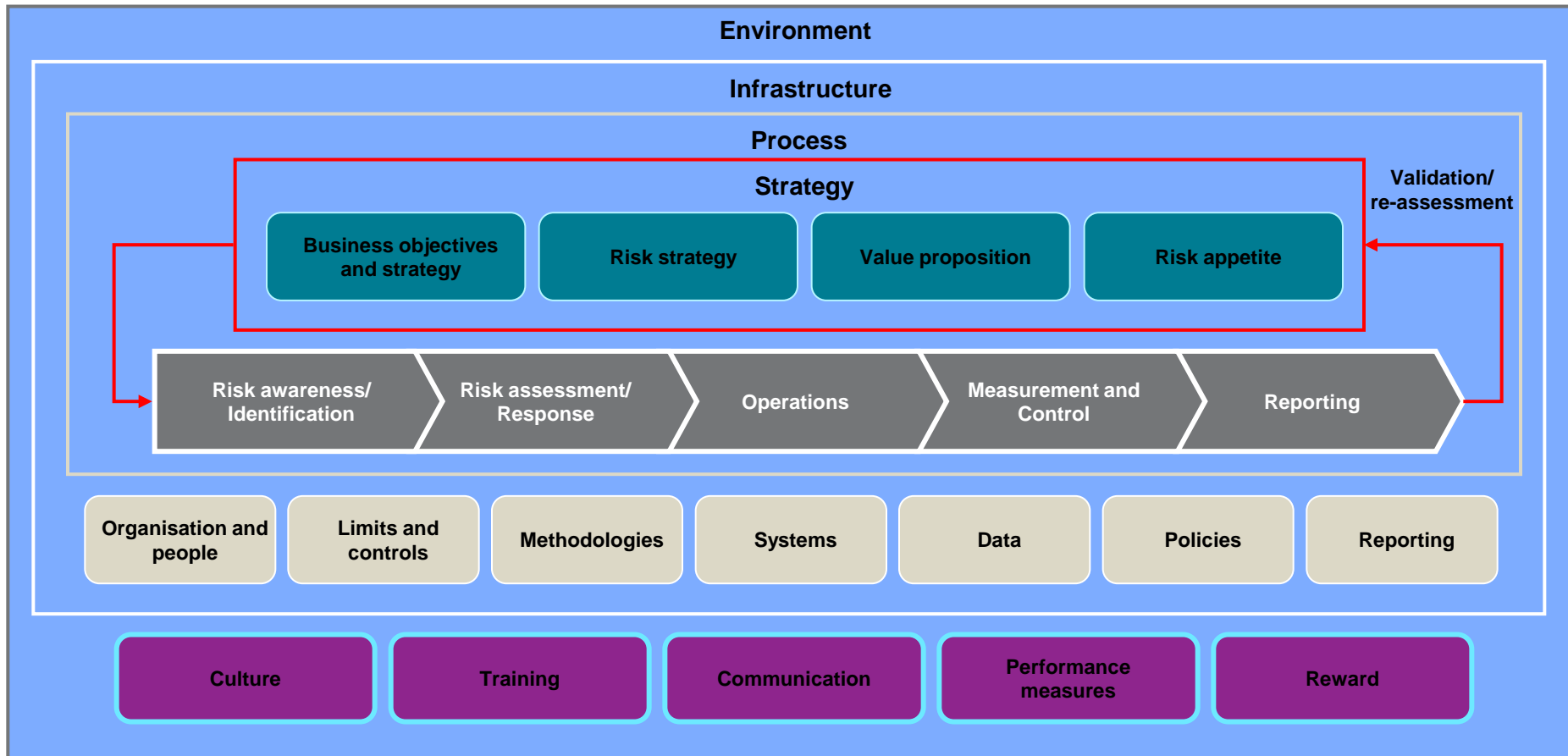


$$\begin{aligned} \log_3(x+2) + \log_3(x-4) \\ \log_3(x-2)(x-4) &= 3 \\ (\text{Solwency II}) &= \text{SOLVED} \\ 27 &= x^2 - 4x + 2x - \\ x^2 - 2x - 35 &= 0 \end{aligned}$$

# The risk function in a SII world

# Risk management activities

- Risk Management needs to cover...



# Solvency II and the risk management function...

- Key activities remain... but Solvency II formalises requirements e.g.

Explicitly required to evaluate the design and effectiveness of the risk management system...

... and report findings to the board... and possibly senior management as well

Identify any material failures of the risk management system and outline solutions...

...identify and assess emerging risks and ways to deal with them

Coordination of risk management activities across the business...

...ensure the correct implementation of the risk policies

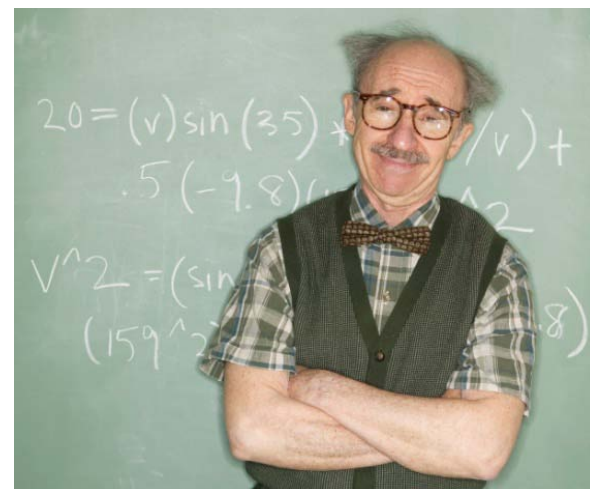
**Need to be independent of day to day business operations**



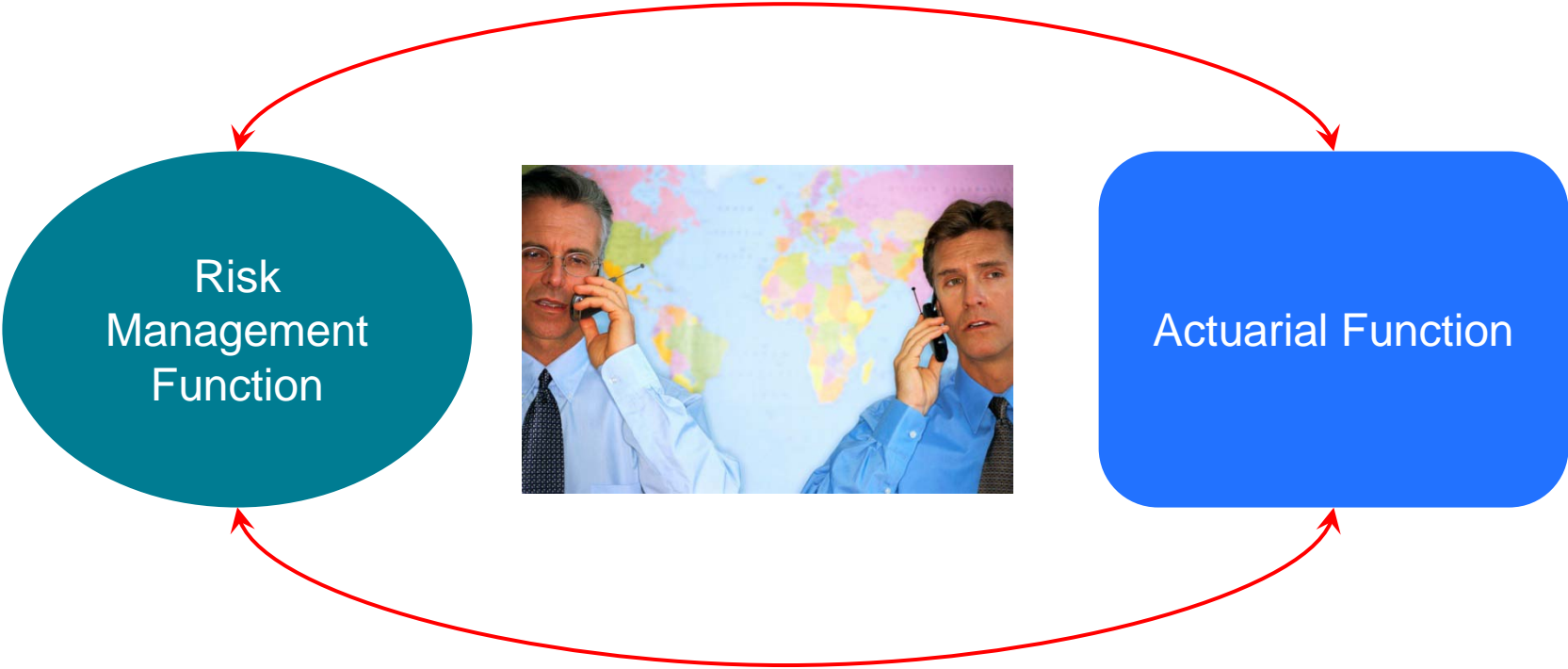
# The actuarial function...

- Responsibility for ‘technical provisions’ – per Article 48(1):
  - Coordinate the calculations of the technical provisions
  - Ensure appropriate methodologies, models and assumptions are used
  - Complete experience analysis
  - Review the data used for technical provisions
  - Contribute to the effective implementation of the risk management system...
    - ...in particular with respect to the risk modelling underlying the calculation of the capital requirements

**“Use Test” Principles: the Internal Model and the calculation of technical provisions should be consistent**



# Communication loop...





# Internal model validation



# What is internal model validation?

*“Validation is a set of tools and processes used to gain confidence over the results, design, workings and other processes within the internal model”*

- One of the six tests:

*Article 124*

*Validation standards*



- But also a broader set of activities – i.e. does the internal model meet all of the tests

*Article 120*

*Use test*

*Article 121*

*Statistical quality standards*

*Article 122*

*Calibration standards*

*Article 123*

*Profit and loss attribution*

*Article 125*

*Documentation standards*

# The risk management function and internal model validation



• The Risk Management Function has clear responsibilities in respect of the internal model:

- Designing and implementing the internal model

• Testing and validating the internal model

- Documenting the internal model and any subsequent changes to it

• Analysing the performance of the internal model and producing summary reports

• Informing the Board about the performance of the model, suggesting areas for improvement and updating on the status of efforts to improve previously identified areas of weakness

▭ Validation activities

# The risk management function and internal model validation

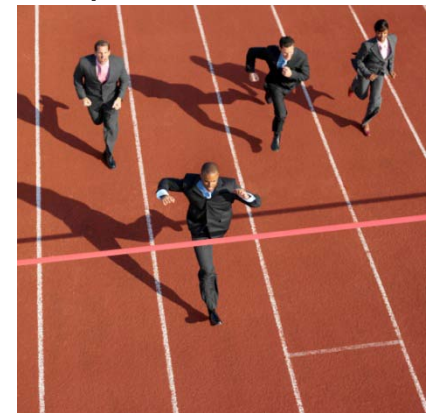
- Independence must be maintained during the validation process
- Validation may be carried out by the risk function, provided the tasks are performed by employees independent of the design and implementation of the model
- Alternatively, the validation may be delegated to internal or external parties to achieve independence...
  - ...but the risk management function retains responsibility, even if only coordinating activity

*“Model validation can be viewed as the control framework, including the Model Tests, around the Internal Model processes”*



# The risk management function and internal model validation (cont'd)

- Independent third line review can also be used e.g.:
  - Review the effectiveness of validation activity
  - Deep dives on specific areas of weakness or concern
  - Commentary on emerging industry best practice
- If the risk function delegates responsibility for parts of the validation to internal audit, must maintain delineation of responsibilities between second and third line
- The validation process needs to be completed as part of model design and implementation  
...as well as once the model is up and running





**Discussion and questions...**

$$\begin{aligned} \log_2(x+2) + \log_2(x-4) \\ \log_2(x-2)(x-4) &= 3 \\ (\text{Subtract 11}) &= \text{SOLVED} \\ 2x &= x^2 - 4x + 2x - \\ x^2 - 2x - 8 &= 0 \end{aligned}$$

# Discussion and questions!



# Thank you

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