ACTUARIAL SOCIETY OF SOUTH AFRICA

Learnings from the validation of bank capital frameworks (Credit Risk)

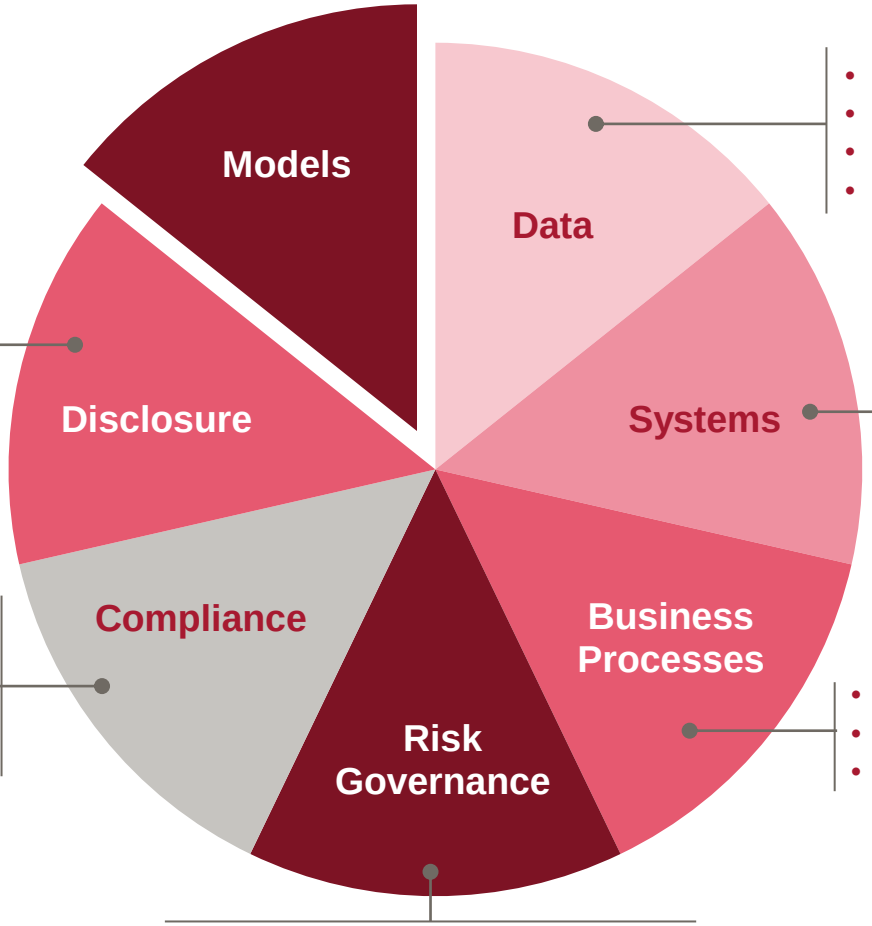
Andries Schutte Riskscape (ex KPMG)

Pravin Burra Deloitte

Agenda

1. Background
2. Data validation
3. Method validation
4. Process validation
5. Governance
6. Conclusion

Background



- Reconciliation
- Data integrity standards
- Use of external data
- Approach to missing data

- Implementation
- General and application controls
- Scalability
- Stability

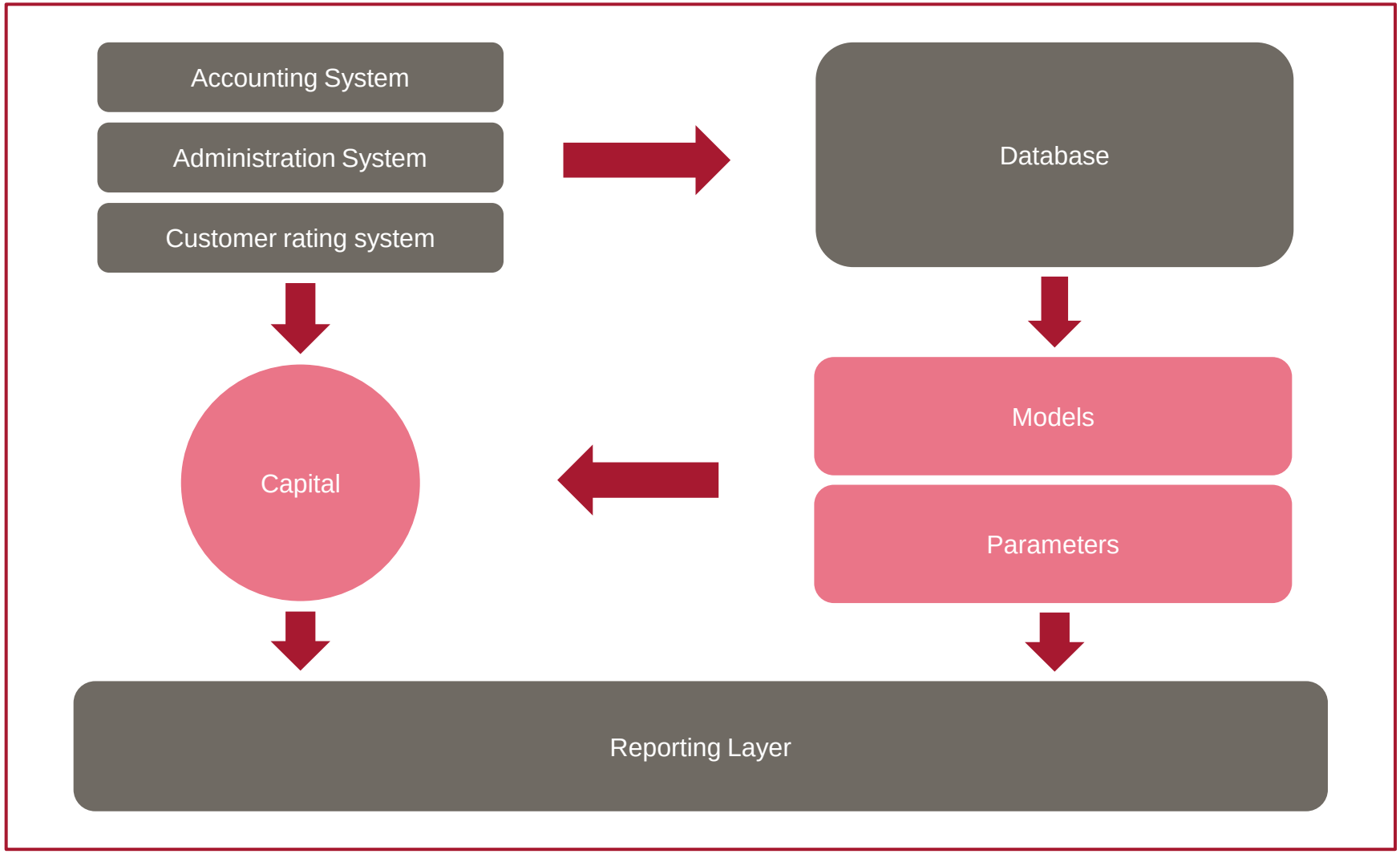
- Origination
- Management
- Risk measurement & management

- Responsibilities
- Policy frameworks
- Reporting
- Quality assurance frameworks

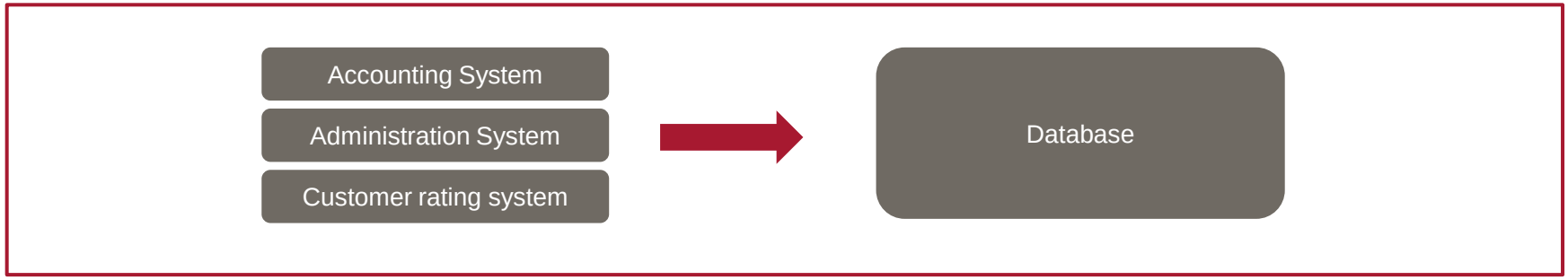
- Asset categorisation
- Minimum requirements
- Stress test
- Use test

- IFRS disclosures
- Pillar 3
- Regulatory returns

Data Flow


Accounting System
Administration System
Customer rating system
Database
Capital
Models
Parameters
Reporting Layer

Data Principles



1. Data definition

- Crude mortality rate, standardised mortality rate, central mortality rate

2. Reconciliation & validation

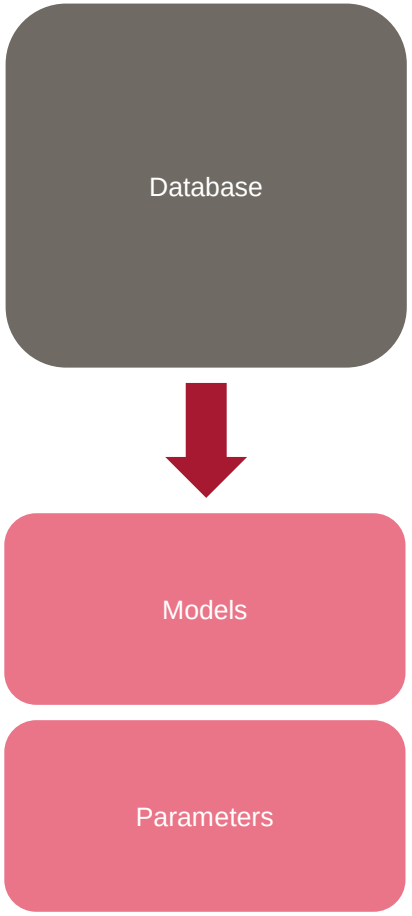
- Treatment of incomplete or missing data
- The fact that data is missing may in itself be a rating factor

3. Use of external data

- Appropriateness

4. Weaknesses in the data and methods to overcome them

Data Modelling



1. Correspondence

- Consistency between numerator & denominator
- Consistency between base population and applied population

2. Population stability

- Population stability tests
- Migration matrices
- Graphs & distribution functions

3. Base period for calibration

- Full economic cycle
- Include period of stress

4. Weaknesses and methods to overcome them

Key Data Issues

ACTUARIAL SOCIETY OF SOUTH AFRICA

1. Data requirements

- Usually not wise to assume that for a task previously undertaken a simple update will be adequate
- Base period – full economic cycle, period of stress etc..

2. Data definitions

- Crude mortality rate, standardised mortality rate, hazard function

3. Reconciliation and validation

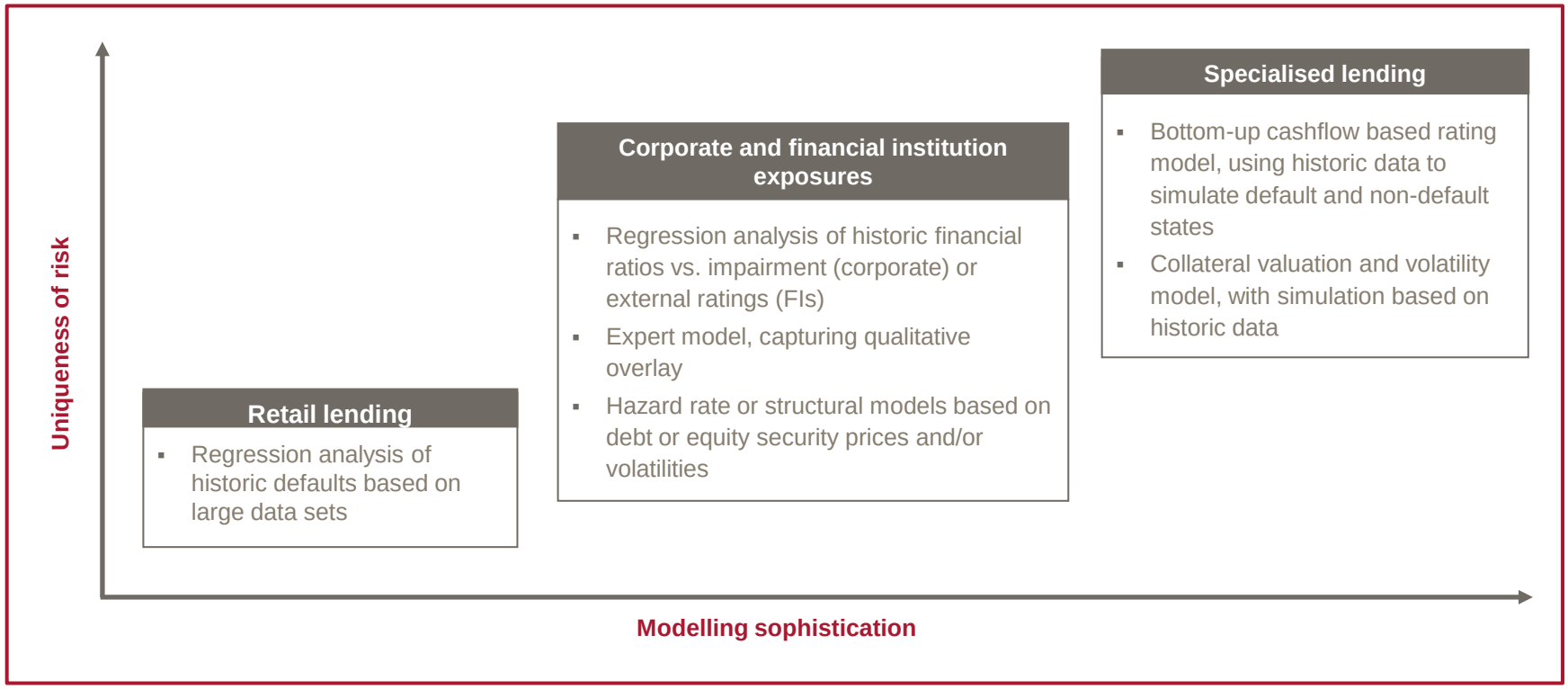
- Treatment of incomplete or missing data
- The fact that data is missing may in itself be a rating factor

4. Weaknesses and methods to overcome them

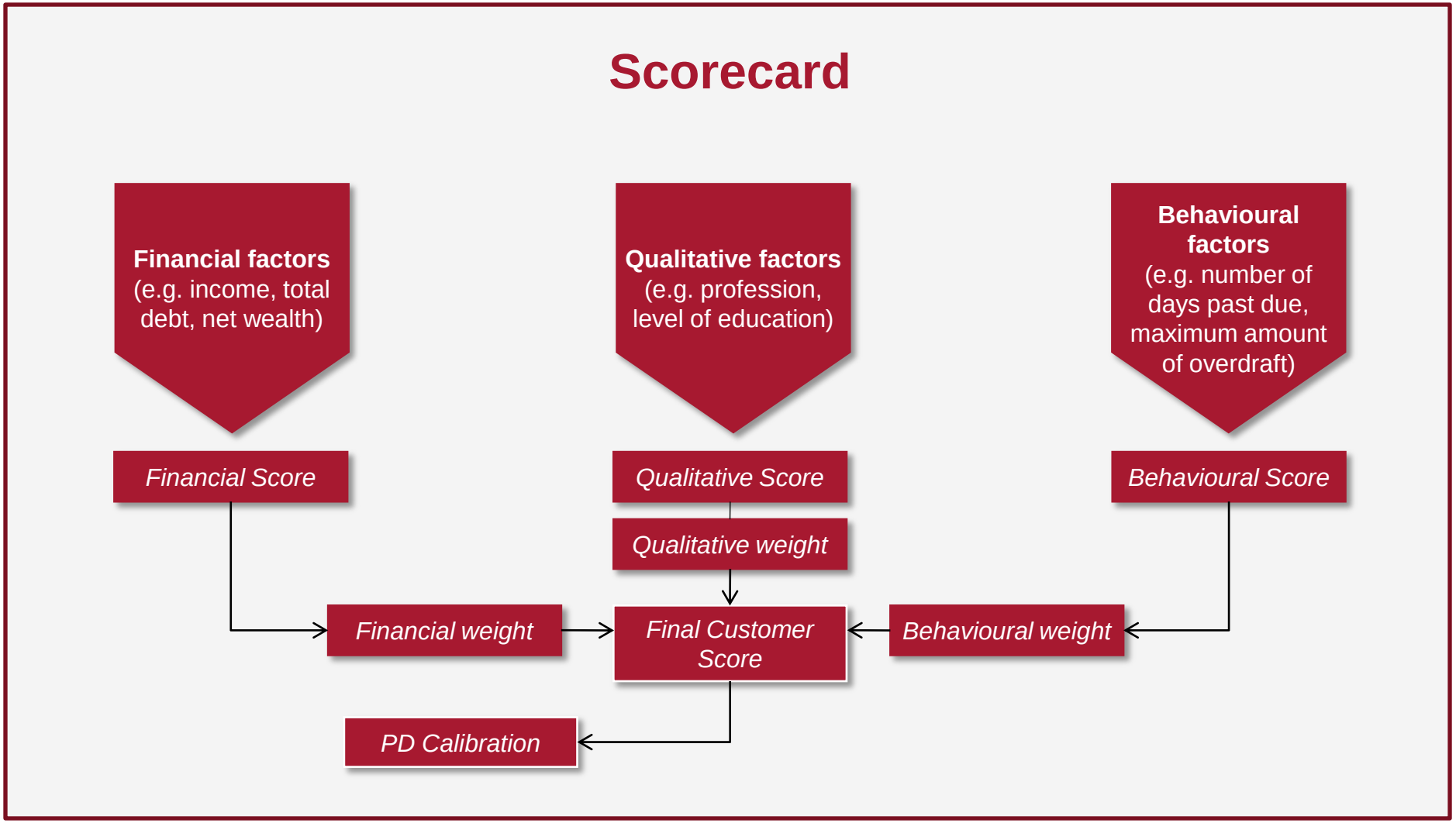
5. Treatment of missing values

Modelling Method – Scope of learnings

- **Methods reviewed**
  - Statistical scorecards
  - Hazard rate models
  - Judgmental scorecards
  - Simulation techniques



Modelling Method – Scope of Learnings



Modelling Method – Learnings

ACTUARIAL SOCIETY OF SOUTH AFRICA

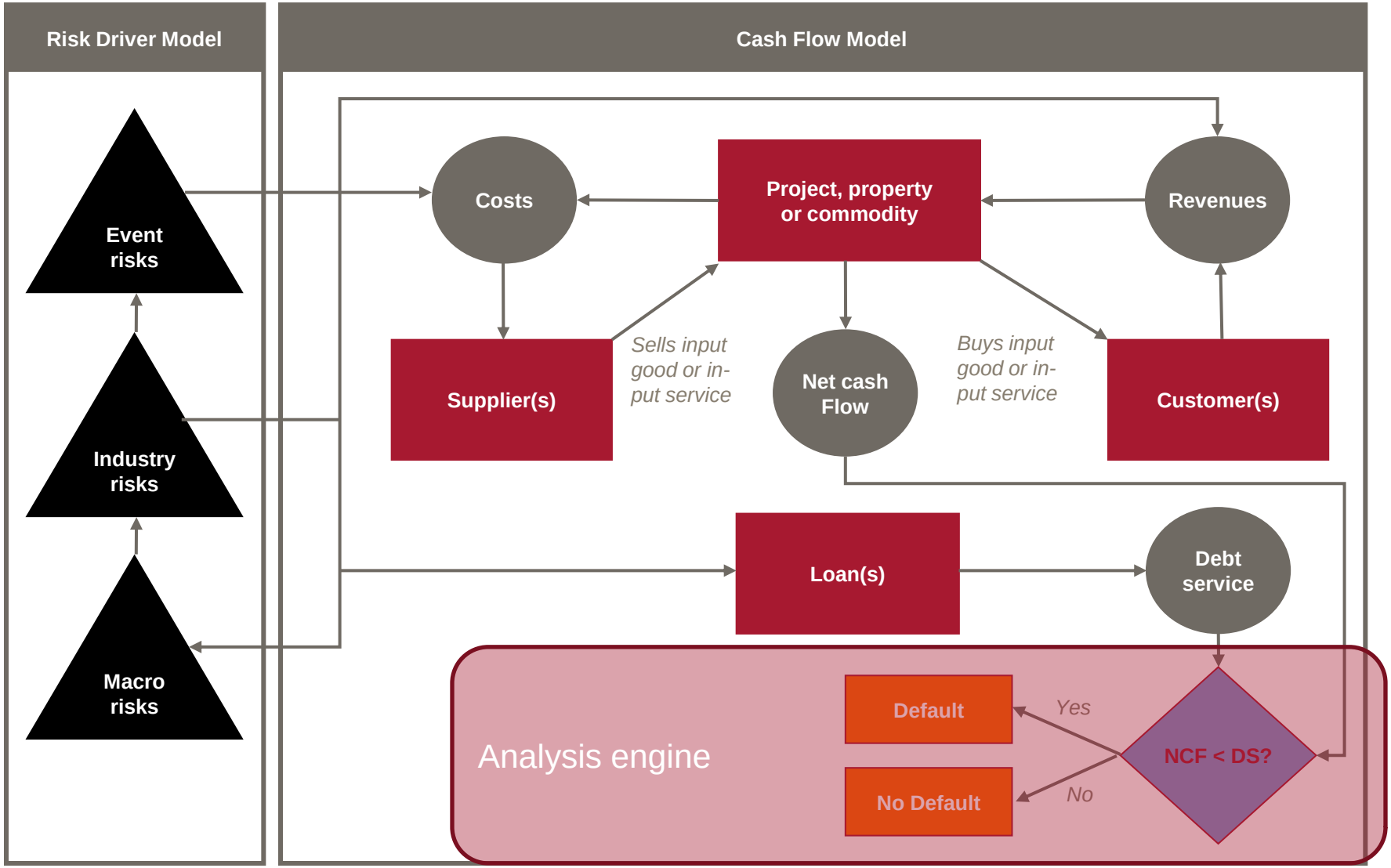
Data
- PIT or TTC
- Default definition
- Documentation

Statistical engine
- Segmentation
- Model standards

Calibration
- TTC issues and policy

- Overall considerations different to causal modelling
- Discipline and documentation
- Basic compliance boxes not always ticked
- Less issues in retail than corporate
- Learnings from out-of-time and out-of-sample testing
- Use of expert input
- Lack of application of “best practice”

Modelling Method –Scope of learnings



Modelling Method – Learnings

ACTUARIAL SOCIETY OF SOUTH AFRICA

Risk driver model

- Data overdone
- General reasoning vs statistics
- Temptation to assess absolute reasonability first

Cash flow engine

- Use of data not maximised
- Value of additional complexity not always understood

Analytics and calibration

- Use of data not maximised
- Complying roughly or exactly?
- Model stability

- Overall considerations different to e.g. scorecards
- Applying judgement where it matters and can be supported
- Basic compliance boxes not always ticked
- To follow the crowd or not…
- Taking a bird's eye view
- Model documentation – proportional to complexity and judgement
- True cost of model
- Vendor models?
- Internal validation skills
- Assessing performance

Process

ACTUARIAL SOCIETY OF SOUTH AFRICA

1. Stage of development

- Models not necessarily implemented
- Choosing a modelling method

2. Model approval and review process

- Reliance on internal audit and internal validation
- Boundary effects of models: Tying the learnings together
- Frequency of model reviews and calibration

1. Interaction with policy

- Model process needs to be part of policy control cycle

2. Models in "production"

- Use test – still concerns
- Version control and documentation discipline
- Governing use of judgement (central parameters, overrides)
- Full benefit from some models not yet obtained

Corporate governance process

ACTUARIAL SOCIETY OF SOUTH AFRICA

Senior Management and the Board

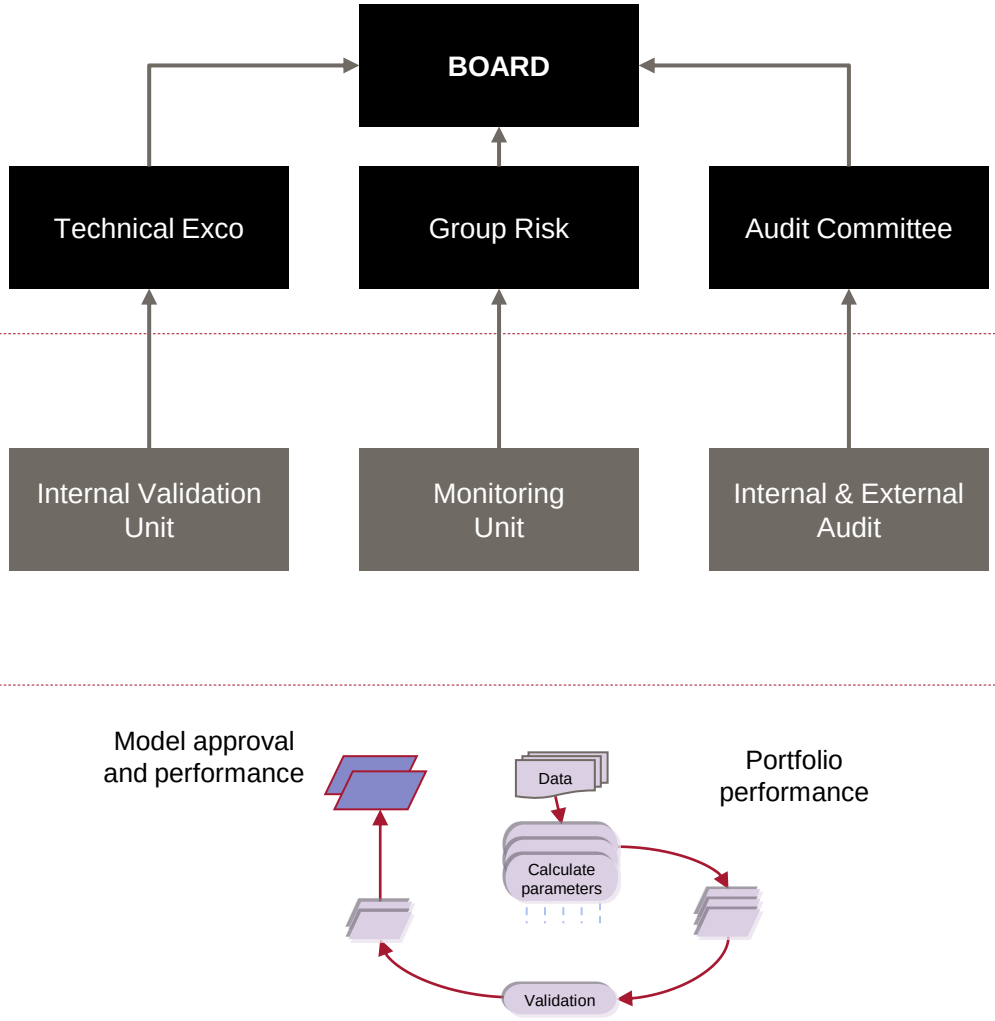
Accountability

Governance Functions

Independent Review

Business Units

Ownership



Key Governance Issues

ACTUARIAL SOCIETY OF SOUTH AFRICA

1. Strength of technical validation unit

- Independence
- Quality and depth
- Evidence of challenge
- What is the message?

2. Documentation

- Adequate developmental evidence
- Ability to recreate results
- Version control

3. Address all critical areas of compliance

4. Other

- Are adjustments supported?

5. Technical issues

- Are adjustments supported?
- Do the grades discriminate risk?
- How does actual compare with estimates?
- How do estimates compare both internal and external estimates
- Evaluate appropriateness of use?
- Change management and governance
- Consistency and relevance

Summary

- How conclusive is the validation process?

- Will a reasonably informed reader of the documentation obtain are clear picture of:
  - Status of the system?
  - Areas of strength and weakness?

- Is it reasonable to expect that an informed non-executive director will get comfort that the system is sound?

Contacts

Pravin Burra

(c) 082 336-1515

(w) 011 209-8118

pburra@deloitte.co.za

Andries Schutte

(c) 082 905 1691

andries@riskscape.pro