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HSBC UK 4most
ANALYTICS CONSULTING

Actuarial Modelling Change: The bad, the ugly and the good

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Introductions

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Agenda

- Modelling Change
 - The Bad and the Ugly
 - The Good
- An Insurers View to Change
- Closing Remarks
- Questions



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The Bad.... and the Ugly....



Change is hard,
yet change is inevitable

However, there are many
barriers to change:

- Justification of change
- Engrained technology
- Cost
- Time
- Resource

The Bad



Navigating these can
be fraught with difficulty:

- Assessing, deciding & negotiating access
- Budgeting the unknown effort accurately
- Not enough time as well as doing BAU
- Upskilling staff

The Ugly



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The Good....

The Good

Multiple drivers for change:

- External: Regulation & New opportunities
- Internal: Efficiencies & New experiences or talent / consolidation
- Vendor: Technological advancement – new functionality



... And More Good

Wide range of software tools:

- Open source: wide ranging & large resource pool + AI help
- Python / R / C# / Julia
- Cloud/SAAS/Internal
- Vendor maintained: Extensive libraries & more open now

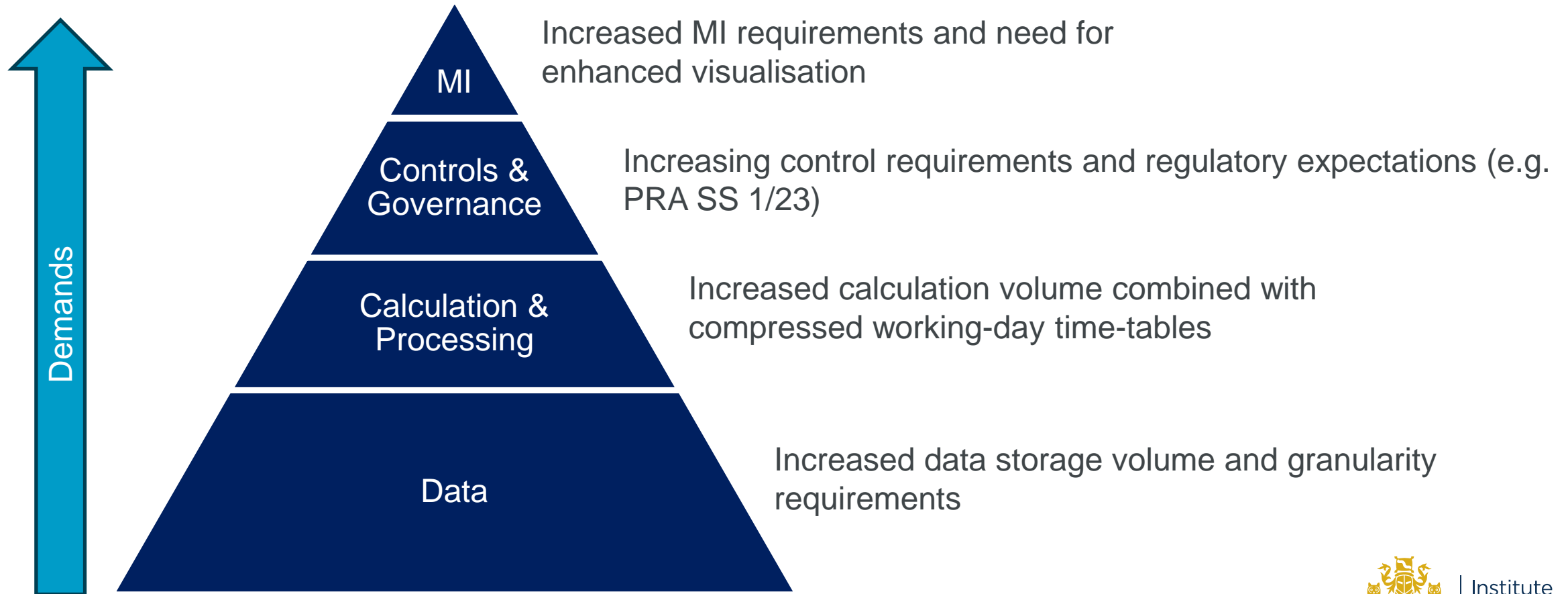


HSBC – Overview

- HSBC Global Insurance serves markets in Asia, Europe and Latin America.
- Key component of Wealth Management proposition within the Bank.
- Circa 150 live models used to support business on Pricing, Regulatory Capital, Economic Capital, Financial Reporting, Strategic Planning, Stress Testing and ALM.
- Model output must be reliable, timely and well controlled, to instil trust and confidence in model-sensitive business decisions and model-driven MI.
- Managing models in the context of a bank has specific requirements, including:
 - Bank-wide policies (e.g. Model Risk Policy and Internal Stress Test Requirements)
 - Prudential regulation for banks (e.g. ICAAP and Regulatory Stress Tests)
 - Bank-driven reporting timetables (requiring results in very compressed timeframes)



HSBC – Growing Demands on Technical Capabilities



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HSBC – Appraising Changes to Technology

Reviewing the Current State

- Where are there gaps?
- Where are the major bottle necks?
- Where is there room for improvement?
- Where are quick wins?
- Which components more challenging to move?
- Key dependencies?

- Cost
- Performance
- Skills
- Usability
- Adaptability & Agility
- Integrability
- Auditability & transparency
- Governance & Controls
- Internal Policy Restrictions (e.g. IT, Data)

Changing Components of Solution

- What solutions available in market?
- Open-Source vs Vendor?
- Modular components versus comprehensive enterprise-wide solution?
- Small Steps vs Big Bang?
- IT & Procurement Involvement?



HSBC – Key Changes IFRS17 and Beyond

Data Transformation and Management

Increased use of SQL and Python to better handle large volumes and improve data management and transformation efficiency.

Process Automation

Using workflow technology to reduce manual steps whilst providing potential to do more calculations in memory and reduce disk read/write operations.

Increased use of Open-Source

Improved security and performance for specific calculation components.

Increased use of Cloud-based Services

More flexible and competitive cost management for data storage and high-scale calculations.

Increased use of Visualisation and Dashboards

Both early-stage results validation and final-stage reporting/MI.

Better Optimisation of Technology Footprint

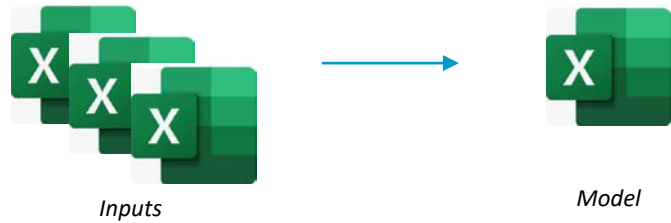
There is an increased focus on reducing total costs and balancing costs across different business processes.



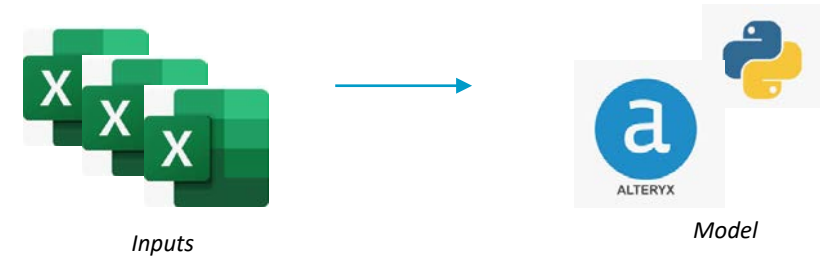
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HSBC - Actuarial Use Case 1

- Capital Projections Modelling



- ◆ Usage: Business planning, Internal & external stress testing
- ◆ Model structured as a core projection engine for IF and NB coupled with a proxy model for estimating market stresses.
- ◆ Centrally developed and run on behalf of local business units
- ◆ Fully based in excel, slow run time, limited in functionality, lack of control
- ◆ Increased demand: More & more stress tests, climate modelling



- ◆ Inputs retained in excel to provide continuity and familiarity. Model rebuilt in combination of Alteryx and Python:
- ◆ Alteryx – automation of processing, data manipulation, simpler calculations. Macro based.
- ◆ Python – more complex calculations (proxy functions, DMC calculation for diversification)
- ◆ Model published on Alteryx server allows local BUs to have autonomy over the model runs but without loss of control.
- ◆ Greater functionality unlocked & Decrease in runtime (monthly timesteps, 8 variable proxies etc.)



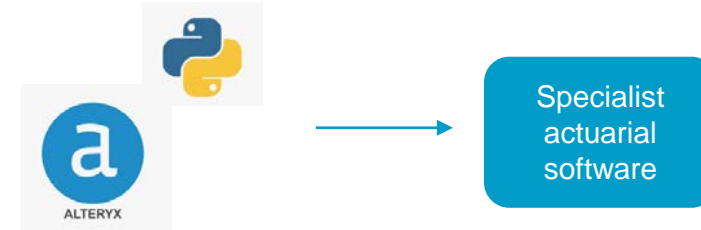
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HSBC – Actuarial Use Case 2

- Economic Scenario Generation



- ◆ Usage: Economic Scenario Generation for use in all Capital and IFRS 17 runs.
- ◆ Demand for scenario sets has increased significantly driven by regulatory change. (100 per quarter in 2020 to 6000 per quarter in 2024)
- ◆ A number of excel spreadsheets are used to process users requests into data tables required for downstream modelling. For large requests can take up to 3-4hrs.
- ◆ The central production team are UK based with users in Asian time-zones resulting in a processing lag.



- ◆ Excel is replaced with a combination of Alteryx and Python. Again, Alteryx used for automation/data manipulation, Python for more complex calculations
- ◆ Production time reduced to 30mins
- ◆ Use of dedicated server allows processing to start when user submits request instead of when the UK team start.



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HSBC – Actuarial Use Cases – Lessons Learned

- What has worked well for us? And what have been the challenges?

Worked well:

- ◆ Trial a number of options and see what sticks (PoC→Full development)
- ◆ Generalist vs. specialist software→ supported more widely across the bank, low cost
- ◆ New processes developed by process owners

The challenges:

- ◆ Tech niggles/IT environment
- ◆ Bringing all stakeholders with you.



In Summary

- **Optimism:** Even though there are still difficulties there is certainly room for optimism in changing your Actuarial Modelling suite.
- **Openness:** Whilst there's key tangible elements to consider the most important element is to openly embrace a culture of change within the business.
- **Opportunity:** One size doesn't fit all, look at what is key to your team and business and determine what opportunities for change there are.



Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.



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