Transforming financial reporting with GenAI: empowering actuaries to deliver deeper insights faster

Alexandre Boumezoued & Romain Lagresle

Moderation: Claudio Senatore Reso

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Presenters

- Romain Lagresle, Directeur Technique Groupe, CNP Assurances
- A 2013 graduate of ENSAE Paris, Romain Lagresle began his career in financial consulting at EY Paris. He joined CNP Assurances in 2021 as Group Head of Actuarial and Accounting Methods and Standards. In 2023, he became responsible for managing the actuarial teams of CNP Assurances Prévoyance, CNP Santé Individuelle and CNP Assurances IARD.

- CNP Assurances is a leading French insurer specializing in personal protection, savings, and retirement products, operating across Europe and Latin America through a multi-partner distribution model.

Presenters

- Alexandre Boumezoued, Principal & AI Director
- 10+ years of experience in scientific consulting and solutions
- Leads Milliman AI Solutions, a new practice dedicated to delivering internal and external AI-powered services

- Founded in 1947, Milliman is a leading independent consulting and technology firm, specializing in insurance, risk management, healthcare, and retirement, with a strong focus on advanced analytics and predictive modelling.

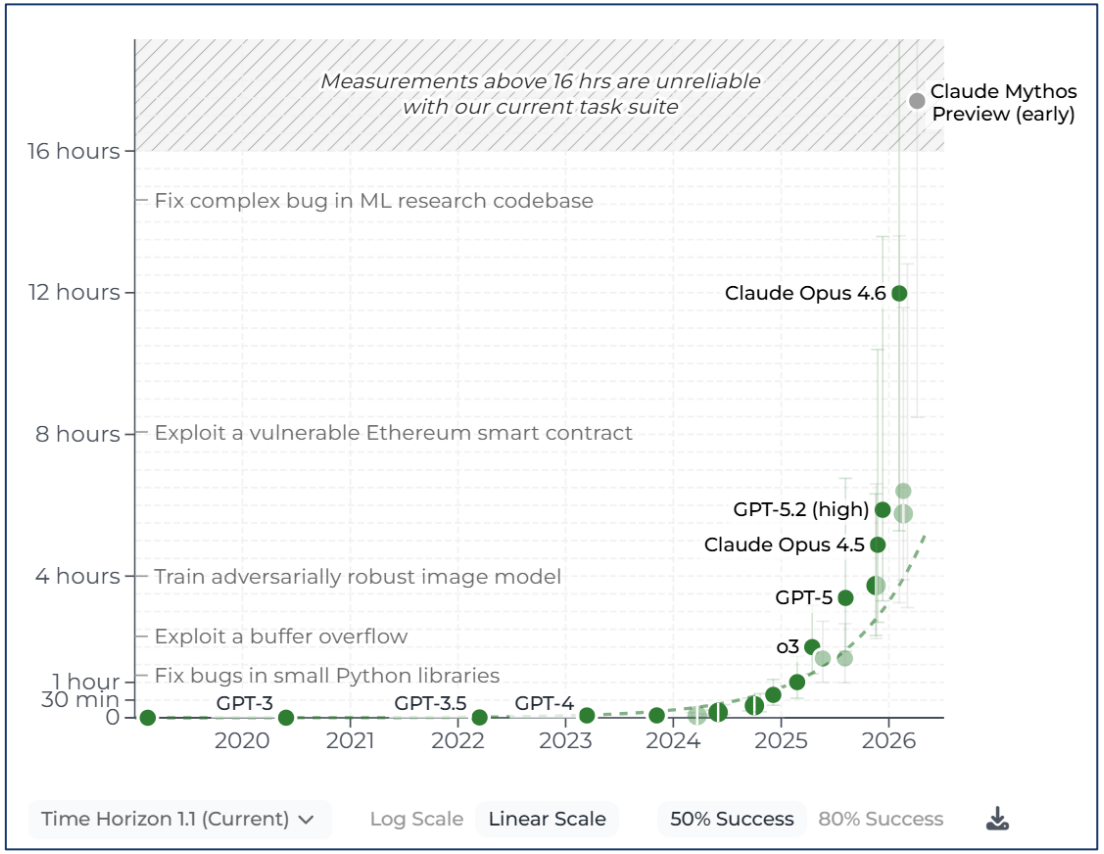
Transforming financial reporting with GenAI

1. Foundations: Pitfalls and Success Factors
2. From Concept to Reality: Illustrations of Use Cases
3. Scaling Up: Roadmap and Industrialization

1. Foundations: Pitfalls and Success Factors

Why Agentic AI now?

- Growing complexity of financial production
- Need for efficiency, traceability, and auditability
- Increasing regulatory and audit expectations
- **Maturity of generative and agentic AI capabilities**



Task-Completion Time Horizons of Frontier AI Models
Source: metr.org

1. Foundations: Pitfalls and Success Factors

What slows agentic AI initiatives down?

- Weak sponsorship leading to fragmented, disconnected initiatives
- Tech-driven use cases instead of business-led priorities
- Insufficient governance covering validation and oversight
- Siloed teams limiting adoption across functions

"About 5% of AI pilot programs achieve rapid revenue acceleration; the vast majority stall, delivering little to no measurable impact on P&L."

- The GenAI Divide: State of AI in Business 2025 (July),

published by MIT's NANDA initiative

1. Foundations: Pitfalls and Success Factors

Success Factors

- Strong sponsorship and a clear operating model
- Answering critical questions related to scope of use and autonomy of the system
- Robust governance: validation, monitoring, auditability, human oversight model
- Cross-functional collaboration across actuarial / finance, IT, compliance…

2. From Concept to Reality: Use Cases

Example: Economic Scenario Generator (ESG)

MCEV

- *Central*
- *Sensitivities*

~ 6 ESG

ALM

- *Central*
- *Sensitivities*

~ 10 ESG

Solvency 2

- *Central*
- *Pillar 1 shocks*
- *Pillar 2 scenarios*
- *Sensitivities*
- *Variance analysis*

~ 20-30 ESG

IFRS

- *Central (VA-dependent)*
- *Sensitivities*
- *Variance analysis*

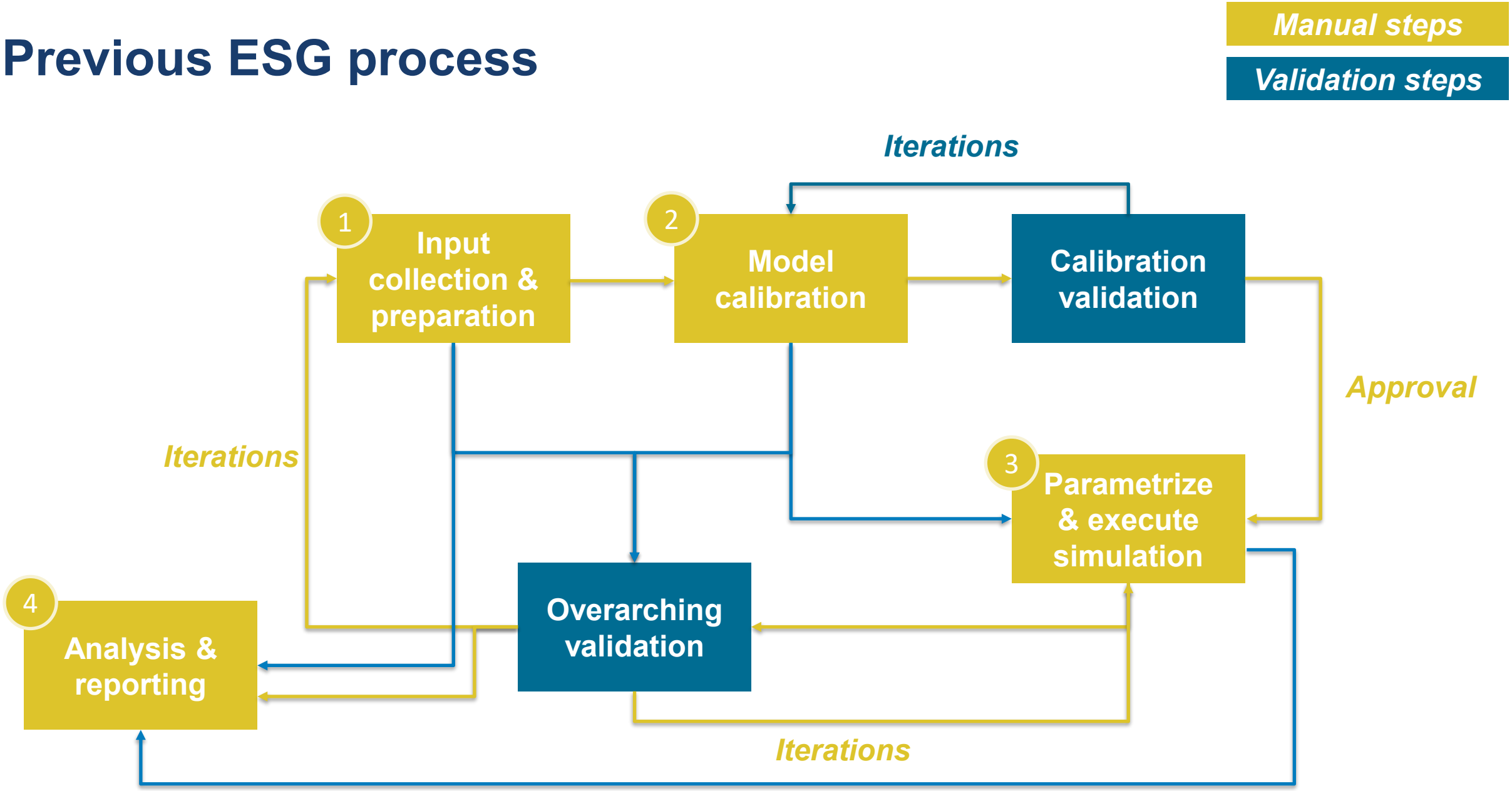
~ 10-20 ESG

More than 200 ESGs produced in one year for a multi-entity insurer using the Standard Formula.

Up to ***1 million trajectories generated*** across various risk factors.

Industrializing the GSE production process is essential

Previous ESG process

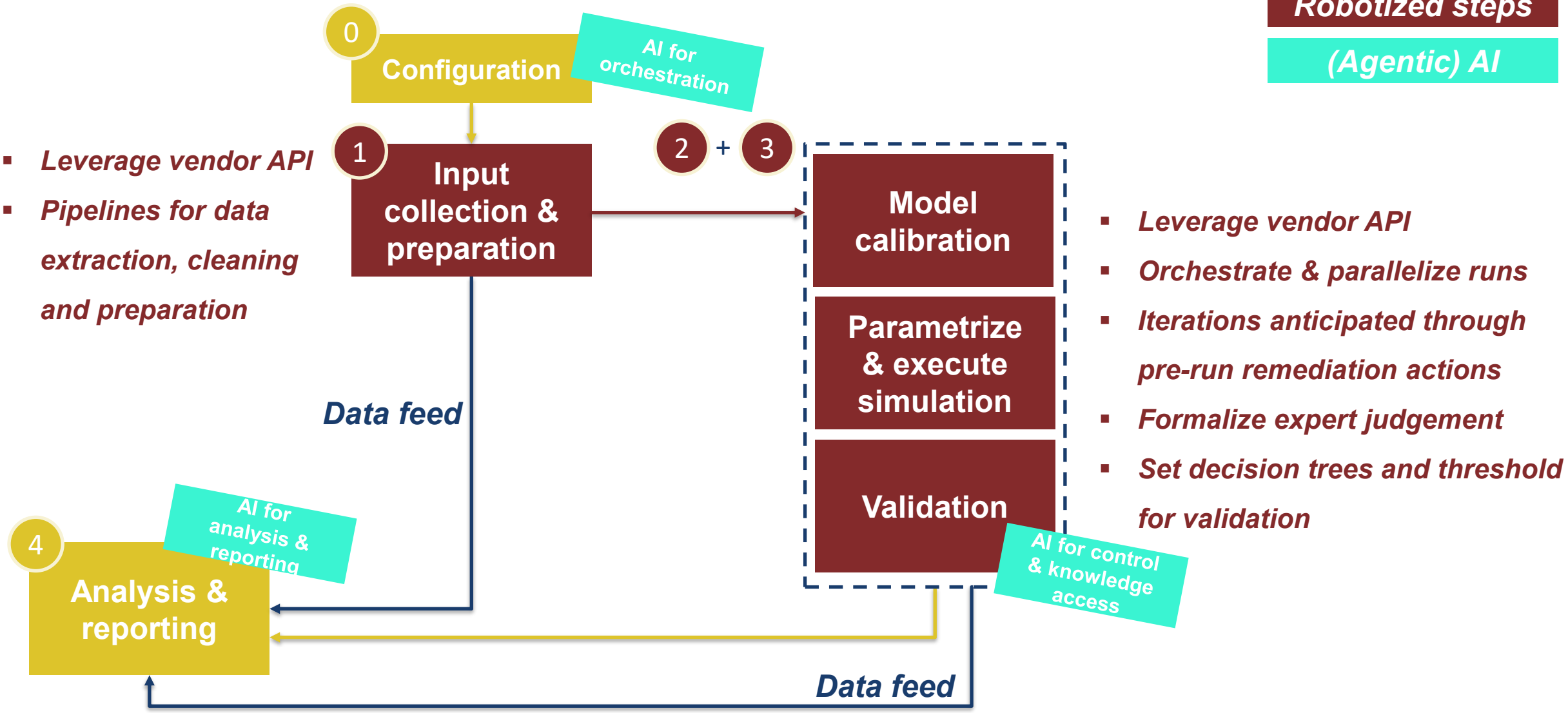


ESG process redesign

Manual steps

Robotized steps

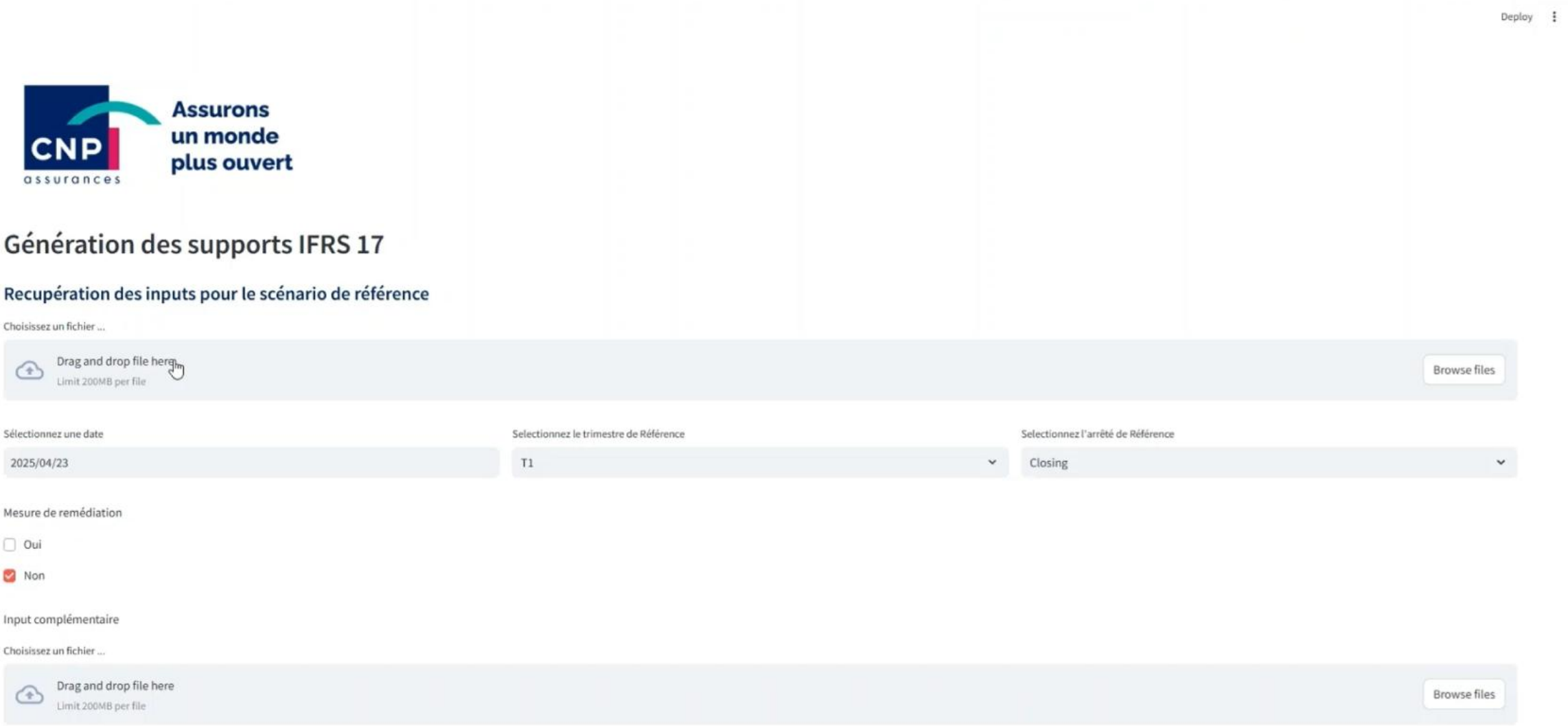
(Agentic) AI



- *Leverage vendor API*
- *Pipelines for data extraction, cleaning and preparation*

- *Leverage vendor API*
- *Orchestrate & parallelize runs*
- *Iterations anticipated through pre-run remediation actions*
- *Formalize expert judgement*
- *Set decision trees and threshold for validation*

Automated reporting solution



Example of generated ESG validation report

Chatbot

1

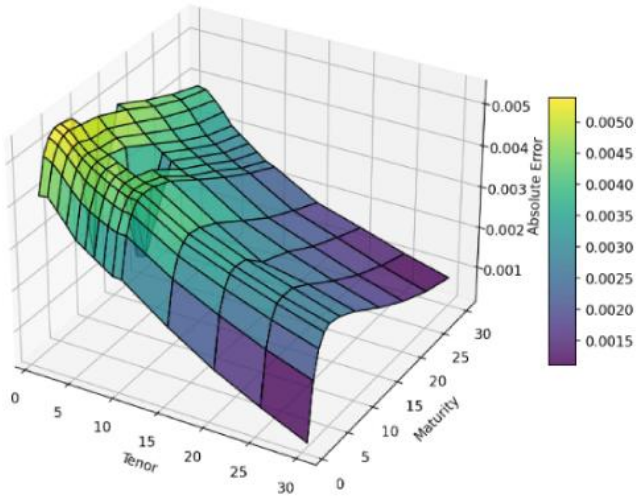
Display a comparative table of ESG results between Q2 and Q3

	Quarter	Date	Rating
0	Q2	28/06/2024	GREEN
1	Q3	30/09/2024	RED

3

Draw a 3d plot of the absolute errors between market swaptions volatilities and model swaptions volatilities of Q3

Absolute Errors between Market and Model Swaptions Volatilities (Q3)



2

Which elements could explain this degradation ? Please give a detailed explanation across the several levels of analysis.

The degradation from Q2 to Q3 can be explained by the following elements:

1. **Tier 3 Analysis**:
   - The "Market Consistency" validation moved from "GREEN" in Q2 to "RED" in Q3, indicating a significant issue in this area.
   - Both "Martingality" and "Correlations" remained "GREEN" across Q2 and Q3, so they are not contributing to the degradation.
2. **Tier 2 Market Consistency Issues**:
   - The "IR Market Consistency Test" failed in Q3 with an "Overall" status of "REJECT". The indicator value was 0.00236, which falls outside the acceptable range for both Stage 1 and Stage 2 validations. This suggests a problem in the calibration or simulation of interest rate models.
3. **Tier 2 Correlation Issues**:
   - Several correlations involving "EUR_IR_10Y" (10-year interest rate) showed significant deviations:
     - The correlation between "EUR_RIR_10Y" and "EUR_IR_10Y" dropped to 13.7% compared to the target of 61.6%.
     - The correlation between "EUR_EQ_1" and "EUR_IR_10Y" was 21.5% compared to the target of 6.4%.
     - The correlation between "EUR_EQ_2" and "EUR_IR_10Y" was 21.7% compared to the target of -3.4%.
     - The correlation between "EUR_RE" and "EUR_IR_10Y" was rated "AMBER" with a value of 18.9% compared to the target of 28.4%.
   - These deviations indicate issues in the correlation structure, particularly involving the 10-year interest rate.

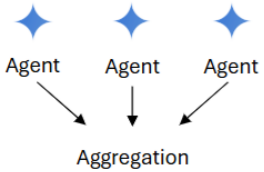
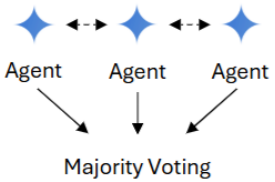
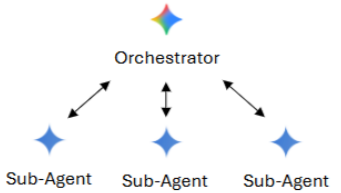
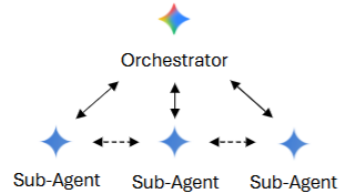
In summary, the degradation is primarily due to failures in "Market Consistency" validation, specifically in the interest rate model calibration or simulation, and significant deviations in correlations involving the 10-year interest rate.

Say something

How to scale AI agentic systems?

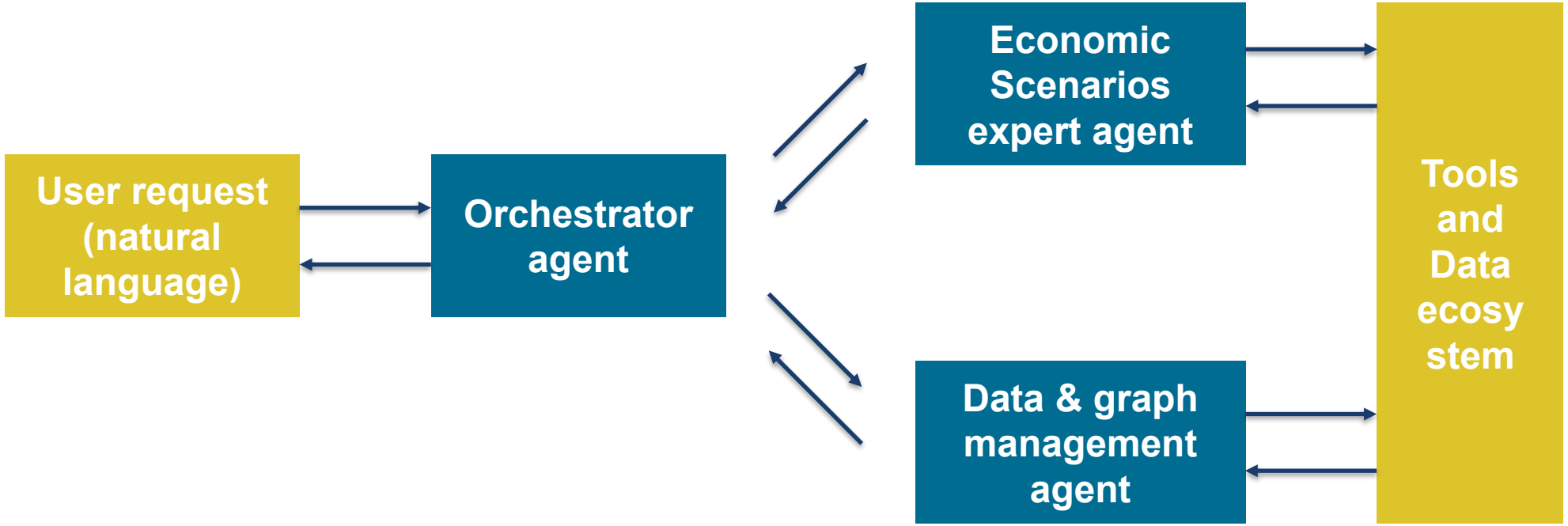
Towards a Science of Scaling Agent Systems

Table 2 | Architectural comparison of agent methods with objective complexity metrics. Computational complexity measured in terms of LLM calls, coordination overhead, and parallelization potential.

Characteristic	SAS	MAS (Independent)	MAS (Decentralized)	MAS (Centralized)	MAS (Hybrid)
Interaction Type					
LLM Calls	$O(k)$	$O(nk) + O(1)$	$O(dnk) + O(1)$	$O(rnk) + O(r)$	$O(rnk) + O(r) + O(p)$
Sequential Depth	k	k	d	r	r
Comm. Overhead	0	1	$d \cdot n$	$r \cdot n$	$r \cdot n + p \cdot m$
Parallelization Factor	1	n	n	n	n
Memory Complexity	$O(k)$	$O(n \cdot k)$	$O(d \cdot n \cdot k)$	$O(r \cdot n \cdot k)$	$O((r+p) \cdot n \cdot k)$
Coordination	Sequential	Parallel + Synthesis	Sequential Debate	Hierarchical	Hierarchical + Peer
Consensus	-	Synthesis	Debate	Orchestrator	Orchestrator

Source: Towards a Science of Scaling Agent Systems, Google Research & Google DeepMind, 8 April 2026

Example of the ESG chatbot – Centralized Multi-Agentic System



3. Scaling Up: Roadmap and Industrialization

1

Frame and target value

Identify priority use cases, map business needs, and define target interaction models across business, IT, and AI.

2

Experiment to validate potential

Validate technical and business feasibility through concrete PoCs, demonstrate impact, and identify prerequisites for industrialization.

3

Execute the roadmap

Redesign the workflows, scale developments, and establish target governance.

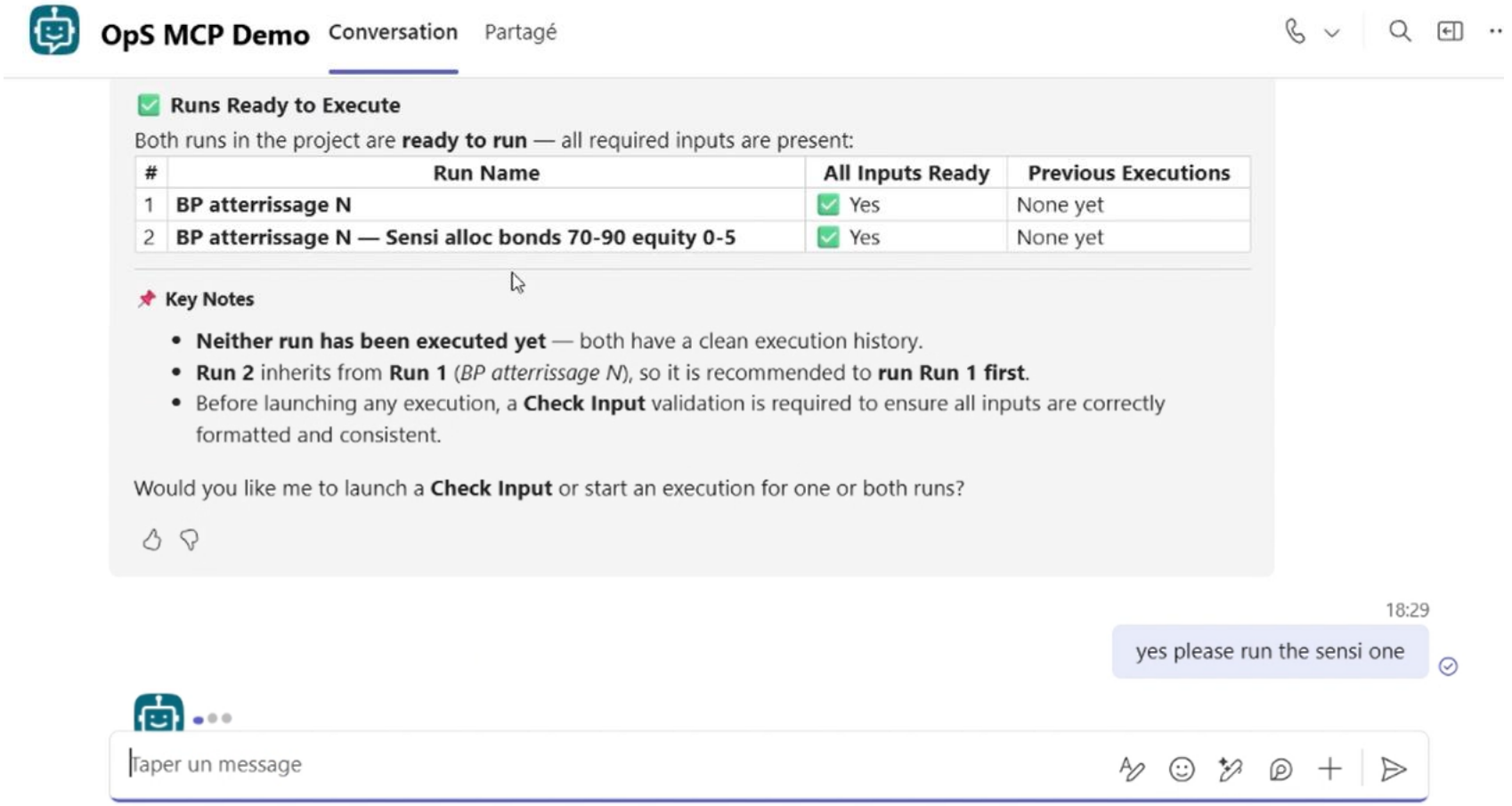
4

Change management

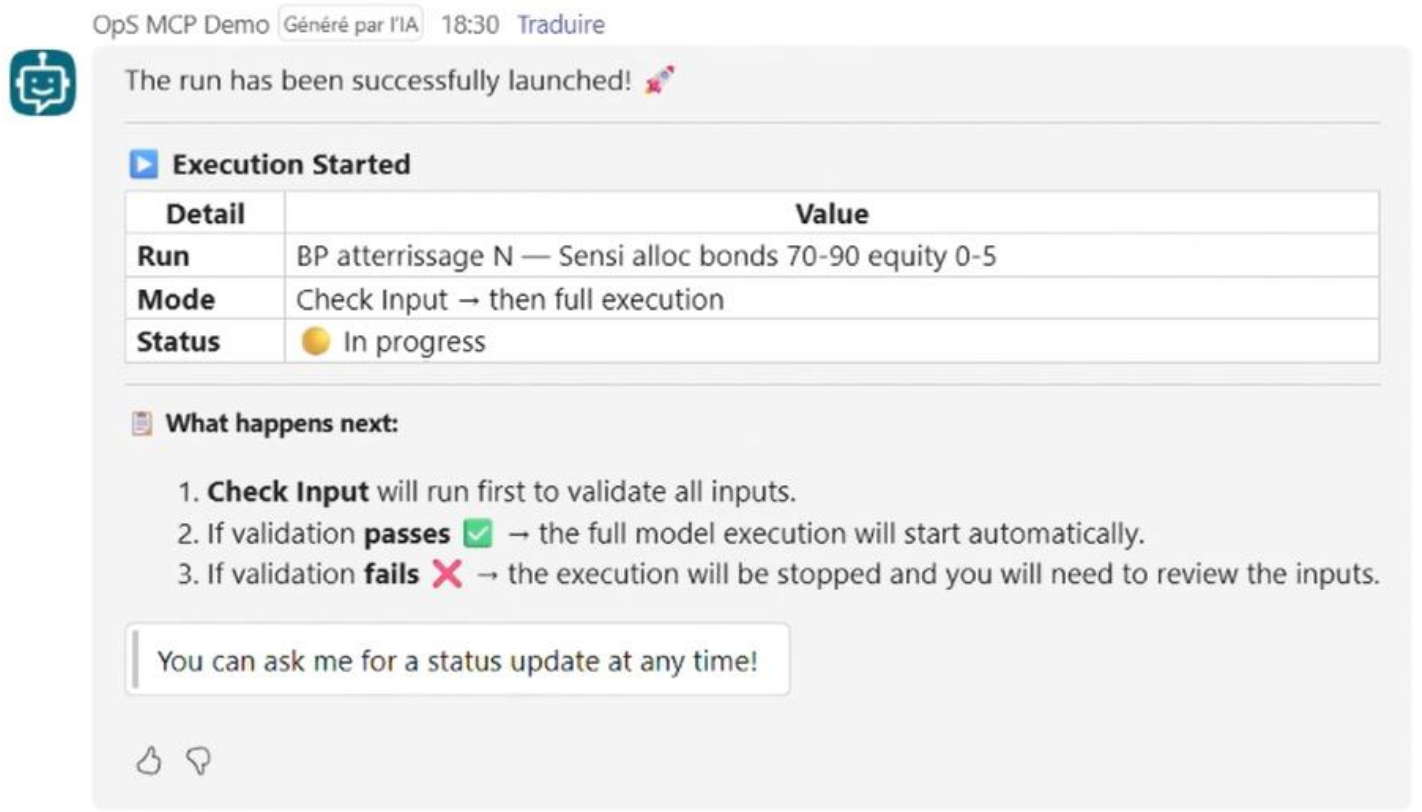
Support teams to adopt the new AI-enhanced workflows and adapt to their new roles.

Example A: Cash flow model orchestration
Example B: Cash flow results analysis & reporting

Example A: Cash flow model orchestration (1/2)



Example A: Cash flow model orchestration (2/2)



Example B: Cash flow results analysis & reporting (1/2)

Use case — Life insurance entity of a bancassurance company · Executive Committee report fully automated end-to-end

What?

- **Customized client solution** tailored to the entity's reporting workflow.
- Large-scale **analyses powered by embedded business intelligence** within the system.
- **Fully automated PPT** with AI-driven, expert-quality analyses.

Proof of value

- **From 5 days to 15 minutes** to produce the report.
- **3× more slides** delivered to the Executive Committee.
- **Unseen drivers and deeper insights** surfaced by the AI analyses.

- ***Euro Component +XX M€ (+XX%)***

***The volume effect**, slightly negative at XX million euros, is mainly explained by unfavorable passive experience variances (-XX million euros in CSM), due to higher-than-expected lapses.*
The impact of new business (+XX million euros) partially offsets the run-off effect on the portfolio.

- ***Unit-linked Component +XX M€ (+XX%)***

*The overall **volume effect** is positive at XX million euros, following very strong inflows (unit-linked mix rate up by xx bps). The additional variation of XX million euros is explained by a **margin effect** of XX million euros, linked to the decrease in the average commission rate observed after experience variances and new business (-xx bps).*

Example B: Cash flow results analysis & reporting (2/2)

*1. The **central agent** defines and allocates the sub-tasks to achieve the final objective. Ex: produce a compelling report on the AOM*

1

Host

Central Agent

*2. It asks the **orchestration agent** to produce the necessary runs at the default granularity (economic assumpt., non-economic assumpt.,…)*

2

Orchestration Agent

4

*4. The **orchestration agent** sends back results of the AOM to the central agent*

Internal Actuarial Code

3

MCP Server
(ex: orchestration)

*3. The **orchestration agent** uses the well-defined MCP(*) to execute the actuarial model and retrieve results*

*5. The **central agent** performs consistency checks and - if correct - sends AOM data to the **control and reasoning** agents*

5

7

AI Agent(s)
(ex: control, reasoning & reporting)

6

*6. The **control and / or reasoning** agents may identify erroneous or incomplete information. For example, the reasoning agent may identify that the impact of economic assumptions is abnormally high this quarter and may decide to request additional intermediate economic sensitivities (interest rate, equity…) to refine the analysis, before leveraging the **reporting agent** to produce the draft report*

MCP tools ecosystem
- ✓ ***Control***
- ✓ ***Reasoning***
- ✓ ***Reporting***

7

***(*) MCP (Model Context Protocol):** a standard interface enabling AI to seamlessly access enterprise data and tools, turning models into action-oriented systems*

Thank you for your attention!