



ACTUARIAL SOCIETY
SOUTH AFRICA

Dynamic deployment essentials

15/08/2024

ABOUT THE SPEAKER



Work:

Experienced actuarial professional with over 6 years of experience gathered from leading insurance & consulting companies in the UK, Ireland, Germany & Poland.

Life:

Passionate climber & coffee scientist interested in way too many things at once.



Mikołaj Skraburski, AIA

Pricing Consultant & CS Manager @ Quantee



ABOUT THE SPEAKER



Our mission: Enable **smarter insurance pricing** with next generation software



Innovating since 2018, helping insurers & MGAs across P&C and Health pricing



Global presence on 5 continents, in 8 markets
(UK, Spain, Canada, South Africa, Thailand, Poland)



Hiring **the best experts** from insurance, pricing and technology space



1. [15min] Motivation

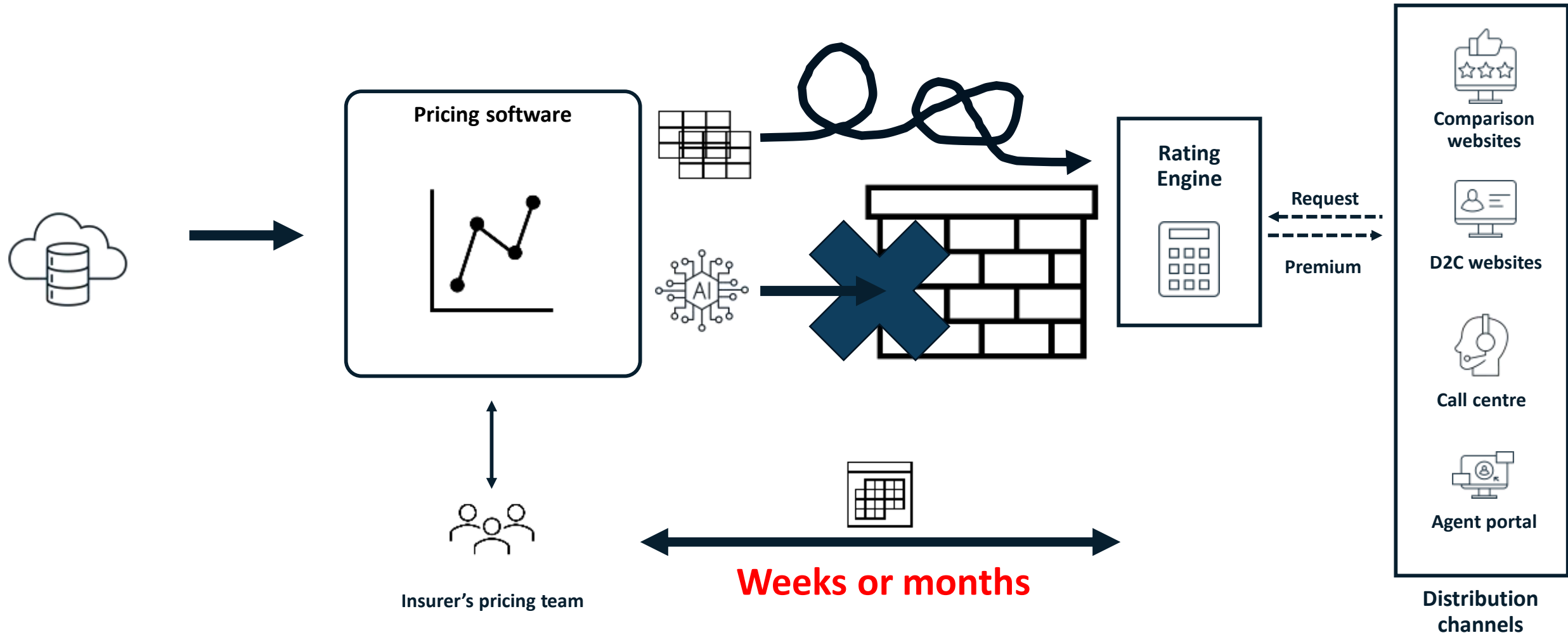
- a) Time-consuming processes
- b) Changes in data & capabilities
- c) Changes in actuarial workforce

2. [15min] Future outlook

- a) Changes in modelling framework
- b) Reduced dependency

3. [15min] Q&A

TIME-CONSUMING PROCESSES



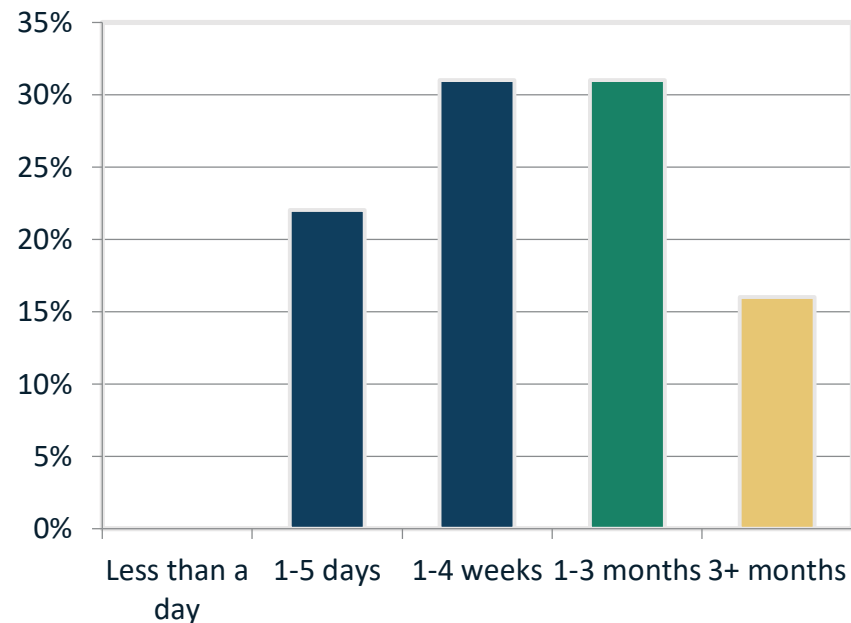
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TIME-CONSUMING PROCESSES

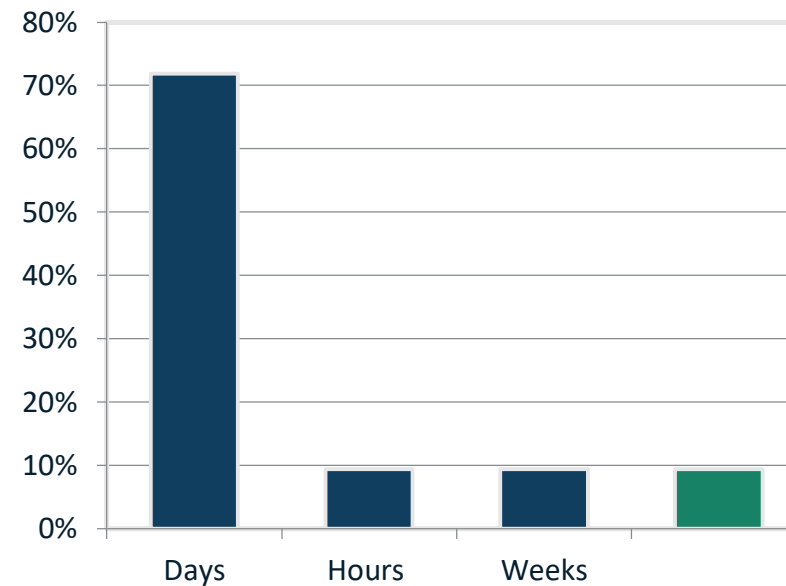


Survey results & insights on total time-to-market:

How much time does it take you to implement a major change to your tariff?



How long should it take in your opinion?



← Time-to-market is not critical for us

CHANGES IN DATA & CAPABILITIES



The world became one big data lake

- Companies strive for marginal improvements via **data enrichment**
 - Rapid increase in **computational power** allows testing more complicated models
 - The World keeps evolving dynamically and insurance business has to **keep up the pace**
-

CHANGES IN ACTUARIAL WORKFORCE



Demand ↑ **Supply** ↓

- The **demand for actuaries** is projected to **increase 24% between 2020 and 2030**¹ – that is much faster than the average profession (~5%).
- The data is based in the US, but same can be observed worldwide as well as in the UK– for instance The Actuary Jobs, had 787 live job vacancies at the start of Q1 2023 – **a 48.5% increase on the figure at** the start of Q1 2013, which was 530².
- On the other hand, the **supply of actuaries is decreasing** - we can all observe that many of the potential candidates for actuarial roles 10 years ago are choosing a non-actuarial career paths for example **data science**. Particularly in senior roles, it is more and more challenging to find an employee with desired skillset.

1) <https://www.bls.gov/ooh/math/actuaries.htm>

2) <https://www.theactuary.com/2023/03/01/take-your-pick>



Change in scope of tasks

- In the pricing function, increased demand for actuaries can be explained by:
 - Increasing competitors' pressure on price in GI
 - More data sources
 - Changing regulatory landscape
 - Changing market conditions (i.e. inflation)
 - Pricing processes are more and more **resource heavy** with extending scopes of actuaries' responsibilities including **data science**, **coding** and even **DevOps** skills.
-



Pricing modelling workflow:

- Global trend of increasing price sophistication due to:
 - increased competitors' pressure,
 - profitability requirements for selected business lines
 - regulatory expectations
- Price sophistication increasing from **rating-based** and expert judgment-based pricing, through market/risk based pricing and finishing on **fully integrated workflows** of pricing model design, deployment and portfolio management allowing for ML/AI.
- There will be more and more data scientist involved in pricing – modern pricing software should allow for **integration with models created in open-source**

CHANGES IN MODELLING FRAMEWORK

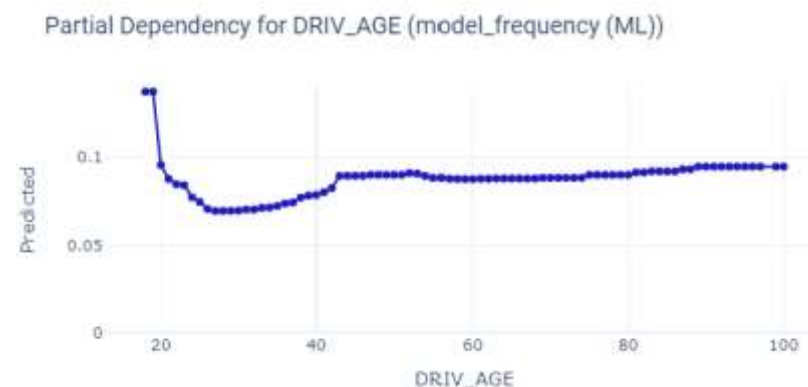
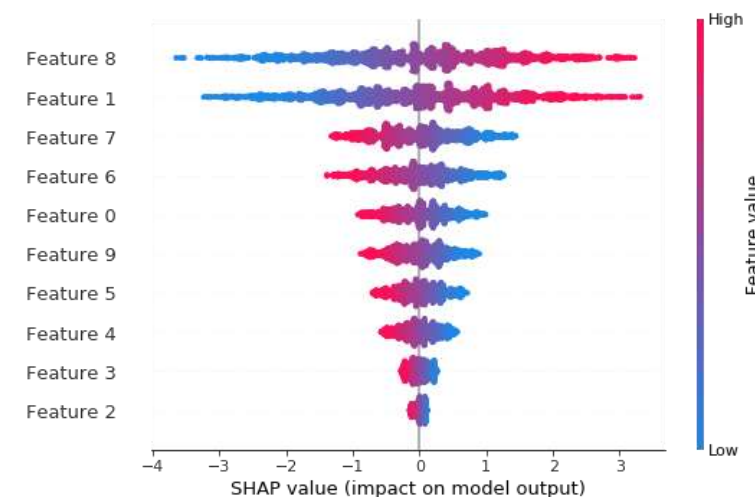


What lies ahead?

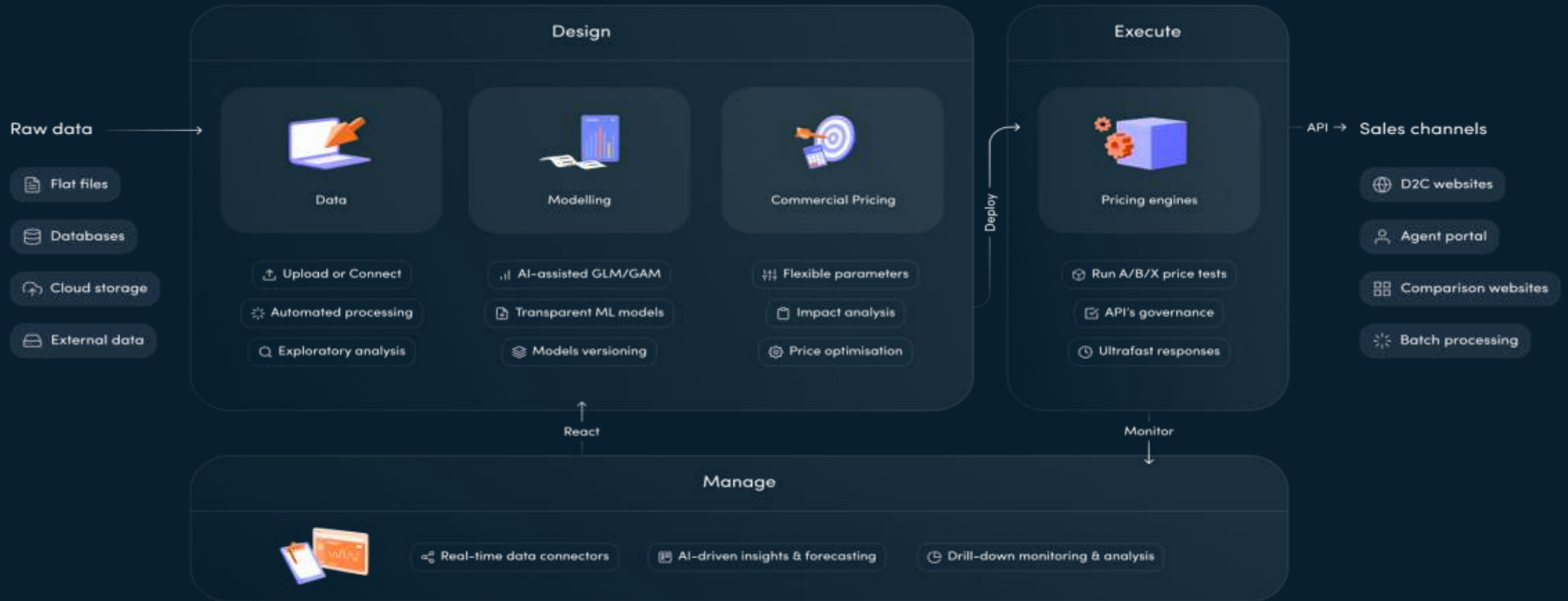
- Application of ML models will continue replacing traditional GLMs/GAMs due to increased volume of data and increasing competitiveness.
- Exploration of ML applications way beyond risk models.
- Regulators will start to slowly support ML models in production – increased explainability (XAI), increasing demand for those techniques (partially thanks to the rise of GenAI).



Graphics source: top-right: [Official SHAP website](#)
bottom-right: Quantee, all right reserved



CHANGES IN MODELLING FRAMEWORK



REDUCED DEPENDENCY



Unlocking new capabilities

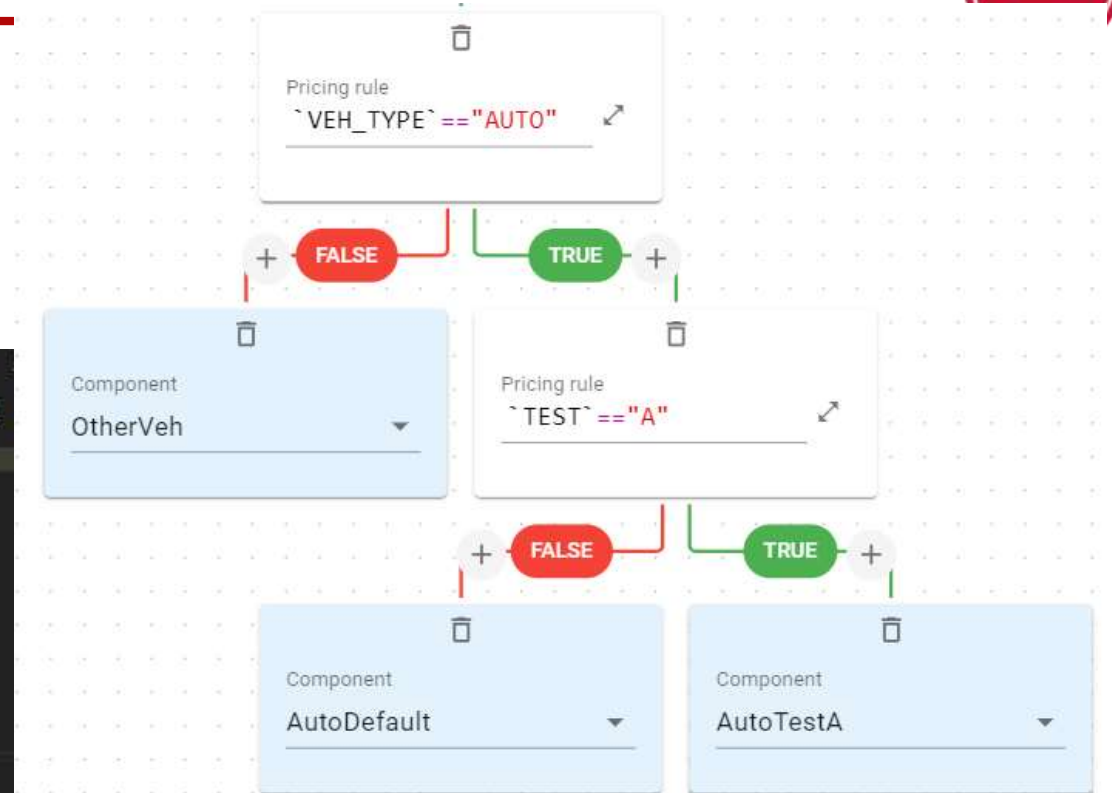
- A/B testing – boost Price Optimisation!
- Multi-model approach
- Mid-term Adjustments (Endorsements)
- Rapid response
- Easy integration

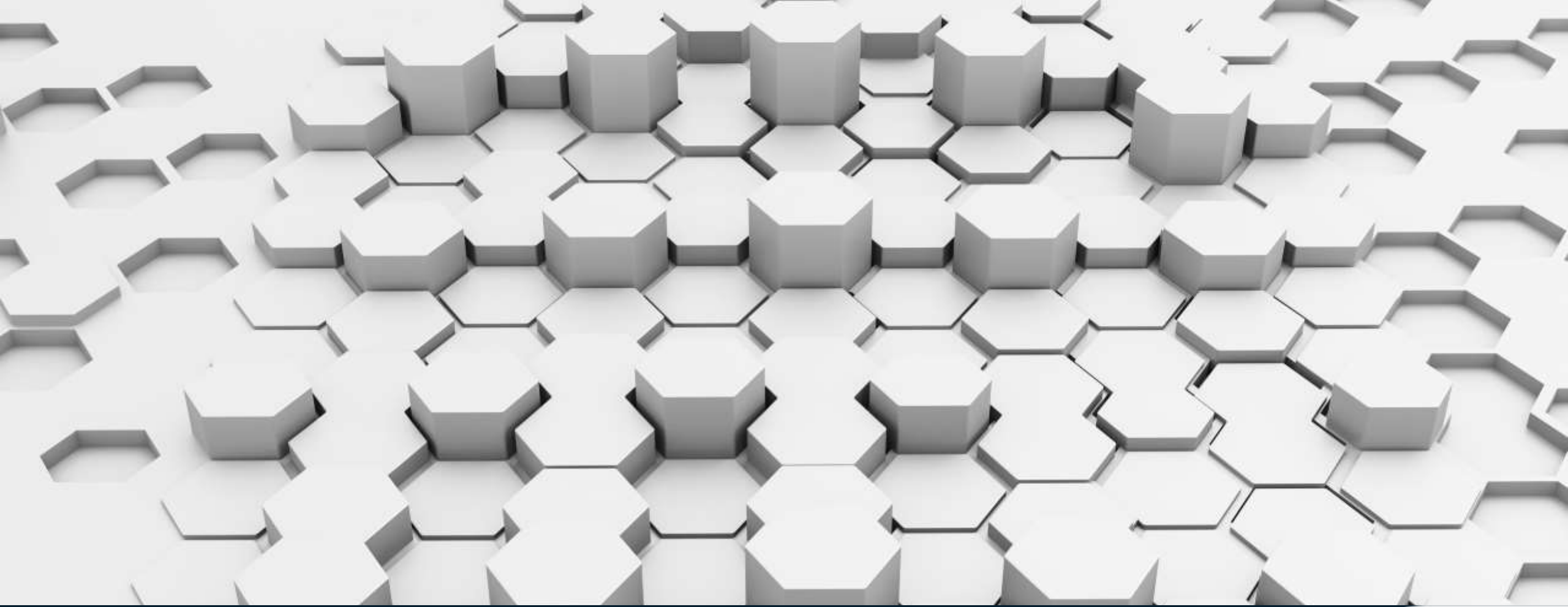
The screenshot shows a web browser interface. The 'Body' tab displays a JSON object with various parameters:

```
1 {
2   "AREA": "A",
3   "BONUS_MALUS": 65,
4   "CURRENT_PREMIUM": 100,
5   "DRIV_AGE": 29,
6   "REGION": "R91",
7   "VEH_AGE": 15,
8   "VEH_BRAND": "B15",
9   "VEH_POWER": 10,
10  "VEH_GAS": "Diesel",
11  "DENSITY": 100,
12  "random": 0.92,
```

The 'Test Results' tab displays a JSON object with various results:

```
1 {
2   "results": [
3     {
4       "commercial_loadings_tax": 48.89628516876349,
5       "costs.actuarial costs": 227.7103916739249,
6       "costs.fixed cost": 98,
7       "costs.variable cost": 22.77103916739249,
8       "data_enrichment.VEH_SEGMENT": "-1",
9       "data_enrichment.lat": 43.59348864298502,
10      "data_enrichment.long": 3.2255613804835837,
11      "demand": 0.893104345349657,
12      "model_frequency": 0.1115051489148699,
```





Q&A



GET IN TOUCH!



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