



IMPROVED INSURANCE BUSINESS PERFORMANCE WITH TECHILA

On October 1st, 2008 a new Insurance Companies Act took effect. This act introduced a new solvency regime to improve the internal risk management in insurance companies. Furthermore, the new regime known as Solvency II also permits authorities to supervise in advance, thus allowing them to start protective actions for insurance businesses before risks start materializing into issues and events. The new solvency rules are based on analyzing the risk positions of life companies, including a high number of “sensitivity calculations” for future cash flows. Obviously, the nature of these calculations is highly confidential.

C is a big corporate company operating in the European life insurance market. C agrees that the objective of the new Insurance Companies Act is great. C has a long history in publishing Market Consistent Embedded Value figures and it has a strong culture in using Asset Liability Management model in its risk management work. Despite the positive history, a careful evaluation of the reliability of the models showed that C modeling experts are unable to deliver the accuracy required by the Act.

Financial risk models are based on sensitivity calculations. The core of sensitivity calculations consist of stochastic simulations going up to 50 years in the future. These provide valuable information about the firm's financial status to various external and internal interest groups, but at the same time, completing them on a sufficient level of accuracy is not always possible in a time-critical business environment.

C noticed that their current way of doing the calculations has accepted radical compromises. This has happened because of time-pressure and the cost of the sensitivity calculations, resulting of their impact to operational efficiency and required computing power. When studying the modeling, it became obvious for C that their business performance would benefit a lot from models, which would be conformant to Solvency II or better. C started searching for a solution, which allowed them to move from accepting these compromises to their conquering them

Challenge

Sensitivity calculations for future cash flows require high computing capacity and allocation of dedicated IT resources, modeling experts and actuaries.

C runs simulations related to sensitivity calculations on high-performance workstations. High requirements for computing capacity make these workstations unavailable to other work during the simulation runs. This decreases the IT efficiency of C every time, when a simulation is run.

Furthermore, the automation of the simulation process is very challenging and sometimes even impossible. After each calculation, the results must be evaluated and calculations will be run again, if needed. This requires assigning modeling experts to support the process. This all decreases the operational efficiency of the organization every time, when simulations are being run. Since the complete calculation process in C takes more than 4 days, the total cost of the analysis process is very high.

To reduce the impact of above challenges, C has decided not to make sensitivity calculations more often than quarterly and to accept compromises on the number of simulations included. These compromises result in models, which can contain inaccurate or faulty results increasing the investment-related risks to C's solvency, and ability to protect assets to meet their liabilities.

Currently, C is able to include 1500 simulations in their processes. In order to increase the efficiency or risk management and to create value, C says that its business would need significantly faster calculation processes. Without faster processes, the Board of Directors cannot have accurate and up-to-date Asset Liability Management data to support their investment plan decision-making. Outdated data is a major risk in this work.

At the same time when the calculation turn-around time should be decreased, C modeling experts know that the number of simulations included in each calculation scenario should be increased to a level of 10000 – 20000 simulations, preferably even above this. This



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Techila Technologies Ltd.
Itsenäisyydenkatu 2
FI-33200 Tampere
FINLAND

requirement and need to reduce turn-around time are in conflict with each other.

If the number of simulations cannot be increased, the accuracy of the model will remain too low and Sales has to continue using radically incomplete models in their work. Incompleteness places C under a constant risk. And finally, without more complete models, C sees that they will not be able to truly optimize their financial performance indicators.

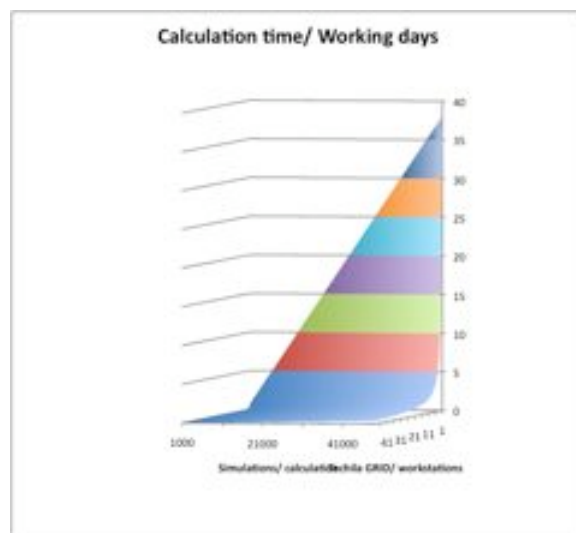
C's IT department have calculated that doubling the speed of the calculation process without increasing the number of simulations included in a run would require them to take an additional High Performance Computer (HPC) investment of 20000 EUR. Increasing the number of simulations included in each calculation scenario to the minimum acceptable level, 10000 simulations, would require an additional HPC investment of 40000 EUR. Above this, the figure will skyrocket. These investments compared to benefits achieved are unacceptable to C IT Management. A more cost-efficient solution will be needed.

Solution

C employs more than 20000 people. Almost every employee has a personal computer. Based on the IT department statistics, two thirds of the personal computers are constantly connected to the Intranet. This is thousands of personal computers, and more than double the number of computing cores.

An IEEE study has showed that workstations have an average CPU idleness of 97,9%. This means that majority of the desktop capacity remains unused. In modern PC world terms, this means that the unutilized computing capacity in C equals to the NEC Earth Simulator world record setting supercomputer. The value of this NEC supercomputer is 90000000 EUR.

C invited Techila Technologies to deliver a Techila GRID solution to their organization. Techila GRID is a software solution designed and developed by Techila Technologies. It takes unutilized PC capacity into use. In the first phase of the rollout project, Techila was installed on 95 personal computers in the modeling organization and supporting functions.



Techila allowed C to take the sensitivity calculations and securely distribute them across the corporate network for background processing. Techila gave C modeling experts access to the computing capacity they needed on demand without a having to invest on a new high-maintenance HPC system. Techila processing did not have any impact the daily work of workstation users in the C organization. The solution was installed invisible to the user, maintaining the operational efficiency of the organization unaffected.

Benefits

Improved accuracy:

Techila rollout allowed C modeling experts to increase the number of simulations included in each calculation scenario from 1500 beyond the target of 20000 simulations. This brought a dramatic improvement to the accuracy of C risk management and established the foundation for an accurate liability management.

Improved efficiency:

After the Techila solution rollout, C modeling experts are now able to run all their simulations in one working day and the model development process has become significantly more efficient.

C IT is now able to provide their Board of Directors a seamless access to always up-to-date Asset Liability Management data to support their decision-making. As



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a result of the enhanced computing capabilities, C introduced a new three-layer modeling process.

The primary model used in daily operations is based on the new accuracy level of 20000 simulations. This model is updated bi-weekly.

The validity of the bi-weekly model is checked with an automated calculation using the old resolution. This test is executed every 30 minutes. If an inaccuracy exceeding boundary values appears, the modeling experts will get alerted.

At the top of the modeling process there is a high-resolution calculation consisting of 100000 simulations. This advanced simulation takes one business week and is run at the beginning of every financial planning period.

As a result of the improved computing capacity delivered by Techila, C Sales have been able to improve their winning ratio. The improvements in Sales efficiency are a result of the ability to provide more accurate offers than their competitors, and their ability to simulate the customer risk profile live, while talking to the customer.

