

Investment Manager: Automating Valuation and Risk Workflows with FINCAD

INTRODUCTION

Our client is a leading investment manager that uses Excel applications across the organization, and throughout cross-functional teams for:

- option pricing/risk
- validating built market curves
- interest rate derivative pricing with scenario analysis
- relative value analysis of bonds and credit instruments

THE CHALLENGE

While Excel-based interfaces and functionality are central to the client's workflows, they fall short of meeting required internal risk standards around consistency and documentation. The client recognized these limitations, in addition to the challenges of managing dependencies and workflows in Excel, which included issues around scalability, accessibility, workflow fragility and the risk of human error. These were addressed by integrating FINCAD with Visual Basic for Applications (VBA) to script custom functions containing complex underlying workflows, which can be called in spreadsheets.

VBA is widely used in the market for writing Excel-accessible desktop applications, typically starting with a solution workbook which serves as a prototype and a validation tool. VBA enables users to get up and running more quickly and easily than other common programming languages, such as Java and C#, at a fraction of the cost – or at a cost that is more proportionate to the use case, and in a familiar application user experience.

Another way the client relies on FINCAD is for prototyping and testing their custom VBA solution workflows. They accomplish this task using our flexible FINCAD Excel solution, which

provides a standard library of predefined calculators and workbooks that simplify the valuation and risk analytics for derivatives and fixed income products. This approach has enabled them to quickly turn around user-protected template Excel workbooks and obtain reliable results.

In recent years, not only did the fund managers' needs evolve in complexity, but there was a growing preference to move away from VBA and instead use Python, which better fit the team's skillset and the scope of more recent projects. An added benefit of using Python is access to an abundance of freely available data and visualization packages. These packages could help address constraints in current projects and offer features that could not be realized in previously delivered projects – particularly where time series analysis is required.

SOLUTION

Our client's preference was to initially replace VBA with Python in a subset of their existing workbooks using FINCAD Python, our powerful Python framework that enables users to easily work within the vast Python ecosystem. Their minimum requirement was to reproduce consistent results using FINCAD analytics and assess the effort in the migration.

The client used Python-Excel integration tools like PyXLL and xlwings when porting over and testing existing applications.

Identifying the required changes in syntax and calling methods proved to be a straightforward exercise, particularly given the team's familiarity with coding in Python.

In addition, some preliminary time series analyses were carried out to demonstrate the ease of use and effectiveness of Python-driven solutions.

THE KEY DIFFERENTIATOR - POWER, EASE OF USE OF FINCAD PYTHON

The client found several strength areas where FINCAD greatly simplified their assessment of effort and risk involved in migrating from VBA to Python-based applications.

- Strong developer user guides for our Python framework with solution samples, which were largely familiar given their previous work on VBA implementations
- Python-specific integration tools like input dictionaries
- Library APIs and integration workflows identical to VBA; existing workflows could be ported over to Python with minimal effort

THE RESULTS

The client is currently undertaking a scheduled migration from VBA to Python. They are revisiting previous projects with the objective of using Python to address needs that VBA could not handle.

The teams see the value of Excel in the speed of project delivery given their narrow requirements. They are benefiting from the collaborative aspect of Excel usage and the ability to take risk out of workbook processes. They are also protecting end users by scripting solutions. With minimal effort, more can be achieved with Excel solutions and collaboration now extends to the online Python community.

LOOKING FORWARD

Our client expects to derive additional value from Python in future projects by making use of the vast ecosystem of libraries and tools, which will dramatically shorten the development cycle and expand the scope of what their project teams can deliver.

While VBA is easily applied to script structured products, and define scenario and risk reports, Python opens up possibilities for advanced analyses like real-time dashboards, pre-trade analytics, strategy back-testing, dynamic hedging strategies and cash flow matching among others.

The other value-add has been the ability to automate unit testing, something that was not easy with VBA. Using FINCAD, the client can now upgrade versions at a substantially lower cost and keep up with the incremental releases.

“There is a clear trend of quantitative professionals preferring Python for automating workflows, because this programming language is so easy to use and versatile. For our firm, moving to Python from VBA has been a natural progression, enabling us to keep pace with the industry, while realizing efficiency and flexibility benefits in the process.”

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