

Case Study Executive Summary:

Unleashing the Power of Citizen-Led Innovation in Financial Model Back-Testing

Organization Overview:

A global financial institution facing a critical challenge in adopting the rapidly evolving digital landscape in its back-office operations. With +10,000 institutional clients, +100 million customers, and daily transactions exceeding USD 4 trillion, the firm's legacy systems and manual processes were impeding progress.

In response to the pressing need to become more efficient, a global financial institution embarked on a "citizen-led" transformation journey to automate and streamline its model back-testing processes. The goals were to reduce manual work, make fewer mistakes, and better follow regulations. They also wanted to create a culture of innovation and adaptability.

Challenges & Opportunities

The institution works in a highly regulated industry. It faced challenges adapting its processes to the evolving back-office digital landscape. With a legacy of manual processes and disparate systems, the existing validation process took too much time and effort.

The appointment of a new CEO underscored the urgency of modernization, prompting a strategic focus on adaptive infrastructure. As a going concern, a wholesale swap of a significant portion of any critical process was out of the question. In addition, a years-old initiative was already focused on meeting requests from the Federal Reserve Board (FRB) and Office of the Comptroller of Currency (OCC).

In response, the firm looked for "citizen-led" solutions. Since employees are always trying to find ways to automate their work, management decided to semi-formalize the most promising efforts.

Why I was able to step in

My skills in methodical problem-solving, effective communication, leadership, and financial management, complemented by hands-on involvement in digital initiatives, made me an ideal person to help with this endeavor.


The Actions

The initiative unfolded through a structured methodology, leveraging Robotic Process Automation (RPA). This guided the transformation from defining the use case to deployment and closure.

The Results

The initiative created an automated solution that could be scaled. It significantly reduced manual work and increased accuracy. The project got rid of over 1,100 hours of work per year. This improved risk management and made the institution more efficient overall.

The project's success did not go unnoticed. The Sector's CFO publicly recognized the project's impact in his quarterly newsletter.



Detailed Case Study:

Unleashing the Power of Citizen-Led Innovation in Financial Model Back-Testing

The Situation

As a regulated member of the financial service industry, this global institution needed to validate the ongoing accuracy of its forecasting models via back-testing against actual results. Not only does this provide Senior Leadership with a critical component of the information needed to drive the business forward, but federal banking regulators scrutinize its accuracy as part of their oversight mandate.

In the prior year, senior leadership was committed to putting the firm on a modern infrastructure. Finance leadership understood the need for the firm to modernize and reduce pain points through technologies that facilitate automation. Model back-testing was an apparent pain point.

With approximately 100 models on the commercial side of the bank, each of which is back-tested multiple times per year, the existing validation process was:

- Highly manual and time-consuming; comprised of multiple touchpoints as the data was transferred between the golden data source and Excel for analysis
- Susceptible to keying errors as results rekeyed into the risk management system for review
- Executed multiple times a year

Financial leadership understood the need to digitize and automate this mundane number-crunching exercise. Successfully doing so would,

- Avoid process errors (reduce risk)
- Reduce costs via better operational efficiency
- And produce near real-time model back-testing results

Organization Overview

The firm is in the banking business. It is a preeminent partner for organizations with cross-border financial needs and a global leader in wealth management and personal banking. The institution faced a critical challenge in adopting the rapidly evolving digital landscape in its back-office operations. With +10,000 institutional clients, +100 million customers, and daily transactions exceeding USD 4 trillion, the firm's legacy systems and manual processes were impeding progress.

The Challenges & Opportunities

Companies are going global at a record speed. Digitization is creating the need for massive scale and greater agility. Society expects the private sector to play an active role in solving increasingly interconnected problems. This is the landscape and external challenges facing the firm and its clients.

In 2021, a new CEO was appointed to lead the firm. An immediate emphasis was placed on modernizing the existing amalgamation of systems and establishing an adaptive and agile infrastructure, which is essential in the new digital landscape. This directive was deemed so fundamental and consequential that the Board

supported a complete transformation.

Internally, the firm's senior leadership understands the situation's importance and urgency. This is evident by the substantial effort the firm is currently undertaking to position and build the necessary resources so that it can manage at the speed and volume of the digital age. However, the firm is a massive enterprise with a culture and a +75-year legacy. A legacy that was the result of multiple mergers and acquisitions in which the people aspect was blended, but the systems never were. As a result, the firm sometimes must pull data from numerous systems and manually combine them to obtain the desired insight. The impact is significant:

1. Reliance on manual processing
2. Probability of inconsistent, inaccurate data due to entry errors
3. Training staff on multiple systems

Thus, if the firm standardized business execution, it could increase productivity, reduce risk, and allocate more resources to value-added activities.

Why I was able to step in

My familiarity with the targeted process allowed me to step into this project, make suggestions on improving it, work with the client and data team to recognize opportunities, and have the engineering grit to make, implement, and sustain changes. But that wasn't enough; I also leveraged the following skills and experiences.

Skills:

- Process-oriented problem-solving
- Clear communications with partners at all levels throughout the firm
- Analytical insights; complex mathematics and number crunching
- Leadership skills
- Financial management: consolidating and reconciling financial data

Experiences:

- Hands-on experience executing digital projects in complex, fluid environments
- Knowledge of organizational effectiveness

The Stakeholders

There were two primary stakeholders in the project: the Financial Planning & Analysis (FP&A) Team, which owns the models and resides within the larger finance organization, and the Model Risk Management (MRM) Team, whose primary responsibility is identifying, quantifying, and managing potential risk for the firm.

Financial Planning & Analysis (FP&A)

Within most FP&A Teams, you have at least two different roles. The first is the more traditional FP&A team, responsible for compiling the financial forecast and, more importantly, digging into the financial statements to help their respective businesses make the right forward-looking data-driven decisions via qualitative models. These teams are responsible for validating their models, so they are keenly interested in moving any mundane tasks off their plates.

The other FP&A team is typically a small group of Quants responsible for developing and coding quantitative, driver-based forecasting models. They collect historical data for a product and then utilize statistical analysis to find mathematical patterns. These patterns are then incorporated into systematic modeling programs to forecast future values.

Model Risk Management (MRM)

MRM is a team within Risk Management, a completely independent organization. It oversees model governance, which includes the validation process, testing frequency and methodology, and evaluation of the results. MRM's interest in the project is to use transparent methodologies to produce repeatable outputs at scale so it can be alerted to models that might be an emerging risk.

Goal

The project aimed to fully automate periodic forecast model back-tests and make the results available within a fully dynamic BI-driven report that allows model sponsors to review, download, and submit the results with the ongoing performance documentation for approvals.

The Actions

My Roles and Responsibilities

During the initiative, I took on two key responsibilities:

1. Business-technology Liaison
2. Digital Project Manager

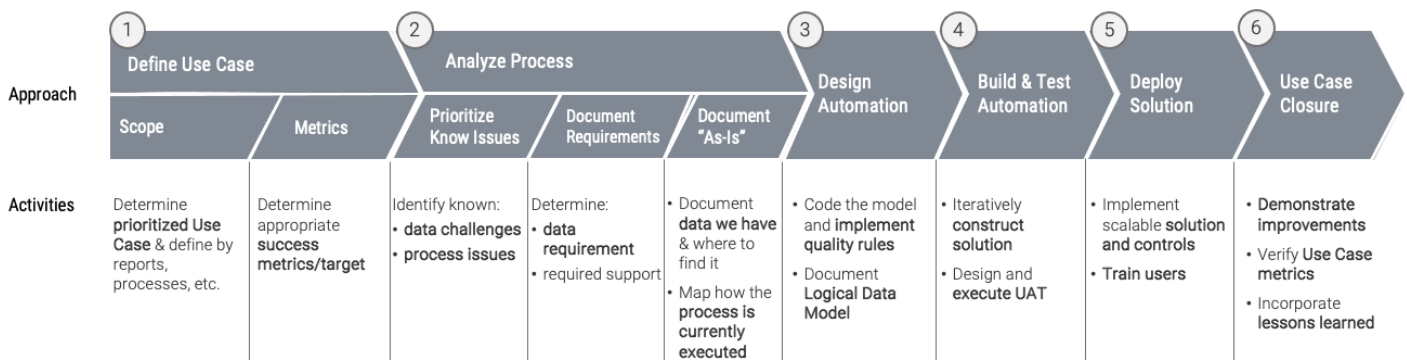
As part of the 3-member team charged with evaluating the concept's feasibility, I leveraged my understanding of the process in question, the client's issues, and technical experience designing and leading the build of similar projects for another organization to:

- Clearly define and articulate the problem
- Design the right path forward with the lead builder and data architect
- Present the challenges, suggested solutions, and support requirements

Throughout the ensuing development phase, I worked with the team members and sponsors to keep the project on track. I kept the client at the forefront by driving engagement, mitigating project obstacles, and overcoming design-build challenges by lending my experiences. And, as the initiative moved into its final phases, I crafted the UAT plan and liaised with the test teams and the developer to resolve any issues.

Transformation Methodology

The core team determined we would adopt the Robotic Process Automation (RPA) framework to shape the transformation engagement. Being a proven and well-documented approach made it easy to get executive buy-in and help the supporting players at every level understand the approach and what was needed of them. The 6-step framework, shown below, helped us achieve a timely, complete, and targeted solution that was fit for purpose in the firm's regulatory environment.

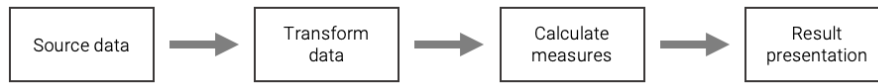


As the project manager, I was involved in the above steps. However, I was intimately engaged with deconstructing the existing process (step 2), clearly defining the proposal so the client could quickly grasp the issue and proposal (step 3), and leading the solution testing (step 4).

Execution

Step 1: Define Use Case

Due to limited transformation experience and a solid institutional case of "yet another fad," the initiative's sponsor limited the initial scope to proving that a BI tool could extract, transform, and produce the needed visualizations in a linear fashion—a classic exploratory project.



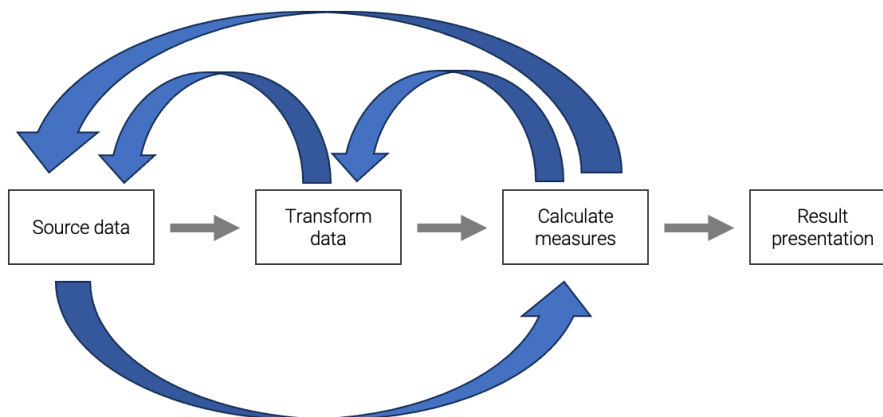
If the above wasn't enough:

- This was also the first "citizen-led" Tableau initiative
- There was uncertainty as to whether MRM would approve a process for testing model accuracy that abstracts away the underlying calculations

Given this level of uncertainty, I, along with the two other initial project team members, played off of each other's project management, technical, and data modeling skills to:

- Understand the "as-is" process
- And qualify the project's feasibility

During this due diligence phase, we uncovered complexities and inefficiencies, requiring data movement back and forth across the entire process chain through feedback loops and iterative calculations. This resulted in the goal being modified from "Can we produce a simple automated report?" to "What can we do to create model back-test reports more efficiently?"

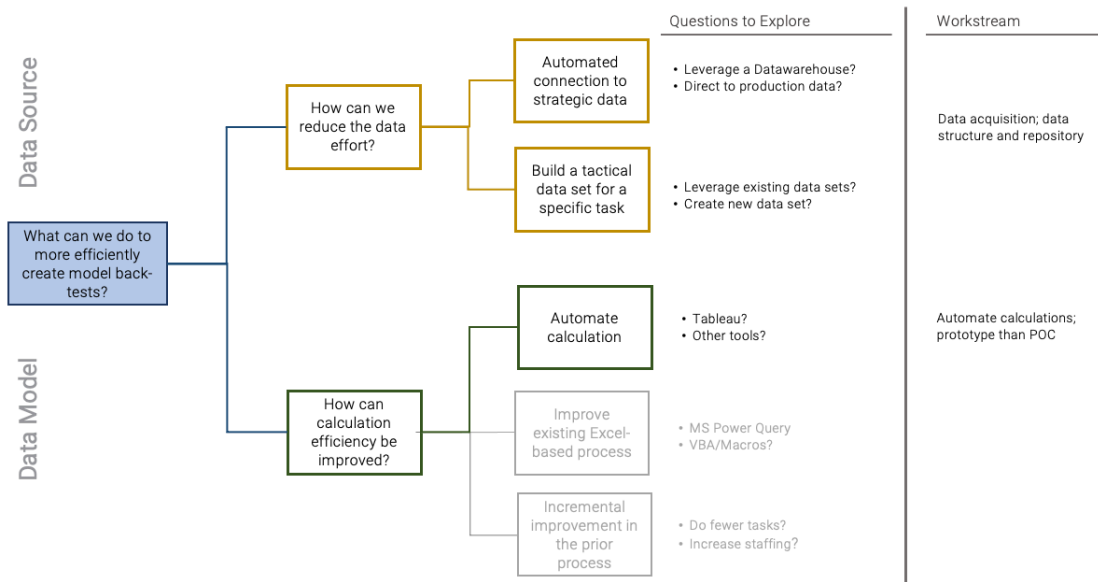


Step 2: Analyze Process

Dove into the process mechanics to solidify our understanding of the intricacies, variations, and dependencies. Specifically, we:

- Reviewed the source data structure
- Deconstructed the types of existing back-test methodologies (data flow & calculations)
- Brainstormed about the capabilities of Tableau and server-side support

As a team, the data analyst, lead builder, and I identified the most complicated parts of the proposal at the outset. Because of our prior experience, we spent numerous hours around a whiteboard bouncing ideas and simple wireframe diagrams off of each other to be in a position to make an informed decision on how to best proceed with the transformation. To outsiders, it may have seemed like an excessive amount of time. Still, we knew that nailing the data, process, and visualization report challenges upfront is far less time-consuming than making substantial modifications mid-development.



Step 3: Design Automation

With the information gathered in the prior steps, a blueprint that outlined the development, needed support, and output was constructed. This included developing scaled-down mock-ups with a dummy sample data set to ensure the proposed direction aligned with the client's expectations and requirements.

This resulted in a viable development roadmap that could be easily parsed out to several workstreams, which could be executed in parallel without the fear of being unable to unite the results at the end of the build easily.

Step 4: Build & Test Automation Automation Build

When consensus on the design was reached, we each took ownership of our book of work. For me, this meant mitigating any obstacles that threatened the build, brainstorming with the Tableau developer when needed, and designing the User Acceptance Test (UAT) script.

As this iterative process unfolded, the build incorporated adjustments and refinements sourced during client feedback sessions. Because of the way we approached the initiative, keeping the key stakeholders well-informed gained more support as sprint results tended to exceed expectations. About two-thirds of the way through the build, the project scope expanded to include all the non-corporate business planning models. This was a great pat on the back and didn't concern the team because the solution was designed to be scalable.



I'm so excited about the rollout of this... and on top of that, our colleagues in Model Risk Management who will receive these automated back-test calculations and information are equally excited about how this can simplify the process going forward.

Managing Director, Finance Transformation, March 2023

Automation Test

Because of the imperative that the build results would work for every model, the UAT program compared the automated solution's results with the most recent valuation results for every model to ensure that the solution acted as intended and could handle various scenarios. Because of the iterative nature of the design process and our doggedness in securing a copy of the prior validation (5 years) dataset early in the build cycle, no significant issues were uncovered during UAT.

Step 5 & 6: Deployment and Closure

Because of the successful UAT, the solution was approved by the Steering Committee and accepted by MRM for production use.

The Results

The initiative developed a solution that:

- Automated data extraction and the creation of the required charts, tables, and calculated measurables.
- Provided a downloadable report and Excel file for inclusion in reporting documents.
- Most importantly, it obtained the blessing of the firm's Risk Management function, the gatekeeper on what activities can be used to satisfy regulator risk requirements.

The initiative was proving so successful that it garnered more leadership supporters, so much so that the original scope was significantly expanded to include models across the firm's institutional and retail elements.



This significant achievement would not have been possible without the efforts and partnership of the Finance Transformation Team, Finance Digital Team and GFT. My thanks to everyone involved.

Director, Global Functions, March 2023

This transformation enhanced the client experience by creating a scalable tool that modernized, automated, and simplified an existing process. It eliminated an estimated 1,100 FTE hours annually, freeing them to work on value-adding activities and decreasing resource requirements, generating approximately \$1M of overall savings. The project also reduced the bank's overall risk profile by eliminating manual data rekeying and implementing systematically consistent calculations.

Key Recognition

The CFO of the institutional side of the bank highlighted the project and its success in his quarterly newsletter, *A Look into Finance, June 2023* - indicating the successful launch and how it is being expanded across the entire firm.

Contact: <https://donaldmcmichael.com>