

## CASE STUDY

# American Century Investments Revolutionizes their Investment Analytics Platform

**Company:** American Century Investments, Inc.  
Mountain View, CA ([www.americancentury.com](http://www.americancentury.com))

**Industry:** Financial Services

**Challenge:** Unite multiple analytics platforms under a single framework in order to access and use more and different data sources while taking advantage of new statistical research in a production environment

**Solution:** Use Revolution Enterprise R to build an end-to-end, quantitative investment platform fit to serve large and innovative research team, as well as a myriad of production investment processes

**Results:** A robust, efficient, scalable and open analytics framework that is supporting rapid development and deployment of new research directly into production and delivering results to a varied audience through 3<sup>rd</sup> party visualization and reporting tools.

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## Background

American Century Investments is one of the world's largest, privately owned mutual fund companies. Headquartered in Kansas City, Missouri, with \$125 billion under management, complex predictive analytics and reporting have been part of their organizational infrastructure for a long time. Their Quantitative Equity Group (QEG) in Mountain View, California, is responsible for \$8.5 billion in investments.

As their name suggests, QEG takes an objective, systematic, and disciplined approach to making their investment selections. They combine quantitative stock-selection models with portfolio optimization procedures, to systematically determine which stocks to buy or sell. The QEG stock selection process is fully transparent; models are founded on economically sensible ideas and implemented using carefully calibrated statistical methods.

## Challenge

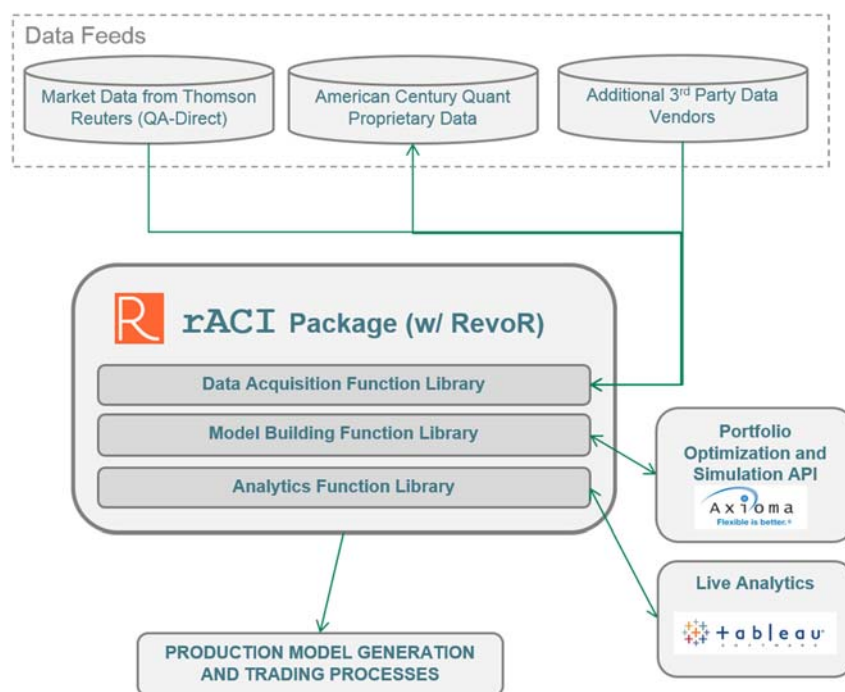
QEG spent years using a mismatched group of applications. They were functionally limited and difficult to customize. "For years our quantitative equity group worked with a disparate blend of 3<sup>rd</sup> party financial and analytical tool-sets that were entirely closed off to one another. Each vendor was good at doing one specific job; be it querying financial data, or optimizing portfolios, or providing performance attribution analytics,

but there was no central facility to do everything in one place,” stated Tal Sansani, Quantitative Research Analyst & Portfolio Manager. The platform they had was effectively limiting their team’s productivity and restricting their ability to innovate on investment products for their clients.

The other challenge arose out of the fact that they are a financial services company and what was commonplace in research was not readily acceptable in production. All of their models are subject to specific methods of calibration and their data sources all require verification and rigorous quality checks. Sansani commented, “Open source is not encouraged.”

Finally, they needed a reliable and interactive delivery mechanism for their results to the group’s portfolio managers. QEG employs a blend of researchers, portfolio managers, and economic experts, all with widely varying technical skills. In order for everyone to make use of the high-end analytics coming from researchers, intuitive accessibility was critical to the project’s success.

### Solution



The Quantitative Equity Group used Revolution R Enterprise to create their own, end-to-end quantitative investment platform. Their rACI package allows them to gain all of the flexibility they wanted while retaining all of the precision and discipline they required:

1. Data / Information Integration – “Any data set we want. We can better inform our core stock-selection models. These new data sets include option pricing, credit instruments, macro-economic data, textual analysis and customer-supplier relationship data.”

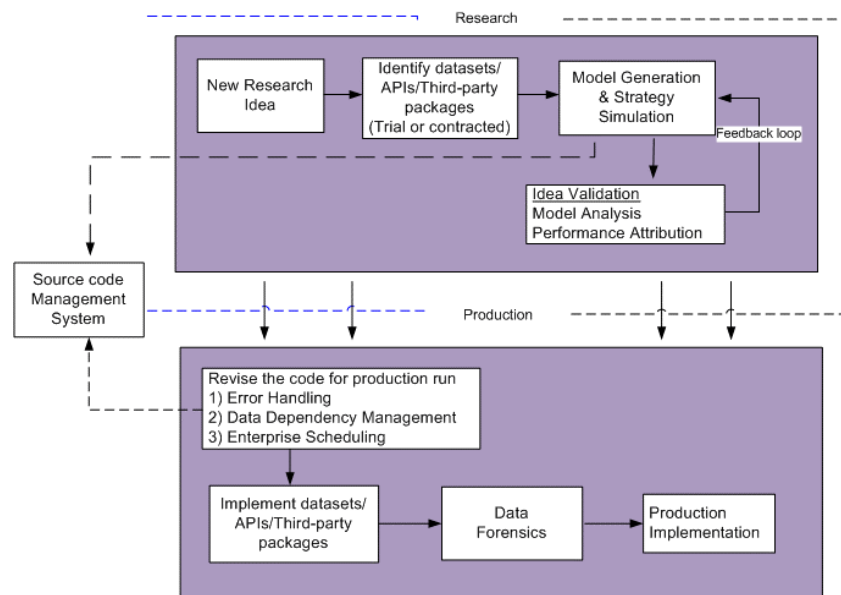
“We began observing how much more quickly the open-source community (in R and Python, specifically) was outpacing the analytical capacity of our commercial vendors. In an information and idea driven business, in which proprietary analytics are absolutely critical, we can’t afford to wait for commercial vendors to play catch-up.”

Tal Sansani,  
Quantitative  
Analyst and  
Portfolio Manager

“We’ve observed our simulations to be 20 times faster than with base R, vastly improving research turnaround, when you are doing exciting things in research, you don’t want to sit around waiting for results.”

**Tal Sansani,**  
Quantitative  
Analyst & Portfolio  
Manager

2. R Open Source Library – “Revolution Analytics makes open source R a viable option for us. No translation means the hand-off from research to production is seamless and has minimal risk for error.”
3. Integration with portfolio optimization and risk management platform, Axioma – “We can run a battery of simulations and scenario analyses in a fully streamlined portfolio optimization framework.
4. Connected Revolution R Enterprise with powerful data visualization platform, Tableau – “Our portfolio managers can now quickly digest the underlying dynamics of our stock-selection models, how they are interacting with changes in the market, and respond accordingly.”



Sampath Thummati, ACI’s IT Manager supporting the QEG, expressed his support for the new system like this, “Open-source tools are generally avoided in large-scale money management but Revolution’s support model with package verification and certification eliminates the risk of malicious code. Their optimized performance enables us to run production processes overnight in time for the next business day.”

### Results

With improved analytics and streamlined research processes, the QEG can better understand the behavior of their models and more quickly adapt to material market changes. The new platform has made it easier to introduce new data sets in order to make the application of graph theory (via the “igraph” package for R) meaningful to their core stock selection models. By applying dynamic network analysis to the man-made network of companies within an industry and mapping the relationships among those companies by analyzing the flow of information, money, goods and services between them, can lead to the discovery of individual companies that might otherwise have been overlooked. Mapping the relationships, clusters and tracking capacity based

upon the data flow between nodes and clusters can lead researchers to identify companies (nodes) within the network that should be researched further. Once identified, companies are then put through a typical regimen of financial and risk analyses in order to determine their “fit” within established portfolio strategies.

The new production environment allows both research and production teams to fully leverage R’s statistical/data-friendly framework to build even smarter and more rigorous data-quality controls; further minimizing risk in their operation. Optimized performance has delivered significant gains in speed for both regular production runs as well as deployment of new models from research to production. As Thummati puts it, “We haven’t experienced any setbacks and are very satisfied with what has been accomplished with Revolution R Enterprise.”

### **About American Century Investments**

American Century Investments is a leading privately held investment management firm, committed to delivering superior investment performance and building long-term client relationships since 1958. Serving investment professionals, institutions, corporations and individual investors, American Century Investments offers a variety of actively managed investment disciplines through an array of products including mutual funds, institutional separate accounts, commingled trusts and sub-advisory accounts. The company's 1,300 employees serve clients from offices in New York; London; Hong Kong; Mountain View, Calif. and Kansas City, Mo. James E. Stowers Jr. is founder of the company and Jonathan S. Thomas is president and chief executive officer. For more information, visit [www.americancentury.com](http://www.americancentury.com).

### **About Revolution Analytics**

Revolution Analytics is the leading commercial provider of software and services based on the open source R project for statistical computing. The company brings high performance, productivity and enterprise readiness to R, the most powerful statistics language in the world. The company’s flagship Revolution R Enterprise product is designed to meet the production needs of large organizations in industries such as finance, life sciences, retail, manufacturing and media. Used by over two million analysts in academia and at cutting-edge companies such as Google, Bank of America and Acxiom, R has emerged as the standard of innovation in statistical analysis. Revolution Analytics is committed to fostering the continued growth of the R community through sponsorship of the Inside-R.org community site, funding worldwide R user groups and offering free licenses of Revolution R Enterprise to everyone in academia.

Please visit us at [www.revolutionanalytics.com](http://www.revolutionanalytics.com)