



# Virtual Data Layer Simplifies Financial Research

## BUSINESS BACKGROUND

This Global Money Management firm has almost 70 years of investment experience, almost \$200 billion in assets under management, 201 institutional clients, and over 9 million shareholders and retirement plan participants. The Firm has a broad range of investment products that includes institutional portfolios, 401(k)s, IRAs, and other retirement plans, mutual funds, variable annuities, and alternative investments for institutions and high-net-worth investors.

## CASE STUDY BACKGROUND

Research is very important to The Firm. Many sources of information must be accessed by financial analysts in order to make the most informed decisions and recommendations. The Firm established the Virtualized Research Data Layer Project with objectives to provide a unified financial data layer, virtualize the physical equity Research Database, and simplify research data access for Financial Analyst users and financial analysis applications.

## THE PROBLEM

Financial Analysts operated against a six terabyte-scale research database in Oracle (RAC). This database combined complex historical equity financial information including company stock portfolio daily positions and trades history, historical daily price data by company and sector from external sources such as Reuters, historical company-specific quarterly financials (e.g. income statements, cash flow statements, balance sheets, other financial metrics data), historical daily benchmark data (e.g. S&P500, Russell 2000, etc.), fundamental analysis (internal estimate, fair value price), quantitative model ranks and scores, risk models (e.g. Barra), external analysts' estimates (e.g. IBES).

## ALTERNATIVES CONSIDERED

Typically, Financial Analysts built financial models in MatLab, Splus, Clarifi, and other modeling tools in order to test the portfolio impact of various hypotheses and trading strategies. Models needed to factor in various assumptions and conditions based on historical data from the Research Database to determine what the historical portfolio performance would have been, and to predict what the future portfolio performance might be.

Historically, analysts were challenged to use a proprietary tool to access the research platform due to a long learning curve. Limited access to key skills for new development delayed application deployment. Sometimes the analyst wrote SQL queries directly to the database resulting in more time spent on data access than data analysis.

*“Composite’s ability to transparently access sources allows us to provide better data so we can achieve improved modeling, this has resulted in better decisions for the business.”*

Senior Vice President  
Global Money Management Firm

## AT-A-GLANCE

### Industry

Financial Services - Money Management

### Business Problem Solved

Complex models simulate portfolio returns under various market conditions and trading strategies. High performance, reusable views of the underlying Research Database increased operational efficiency and customer service.

### Data Integration Patterns

- Data Virtualization
- Data Federation

### Composite Software Products

Composite Information Server 3.7

### Data Sources

- Oracle RAC
- Customized research application server

### Data Consumers

Financial models built on MatLab, Splus, Clarifi, etc.

### Platform

Linux

## ALTERNATIVES CONT.

Furthermore, many custom extracts by the analysts were replicated into small Microsoft Access marts. This rogue proliferation of data was less than ideal.

## THE SOLUTION

The Composite solution was chosen to achieve the objectives of the Virtual Research Data Layer Project, federated views are modeled in the Composite Information Server to virtualize, abstract, and federate data from the Research Database. This simplifies the data for the Financial Analysts for use in their models. Views are built by application teams, who have deep knowledge of data structures, and Business Analysts, who work directly with the Research Analysts to understand their data needs. However, much work can now be pushed out to the end user, freeing up time for IT to concentrate on projects that require their deep technical skills.

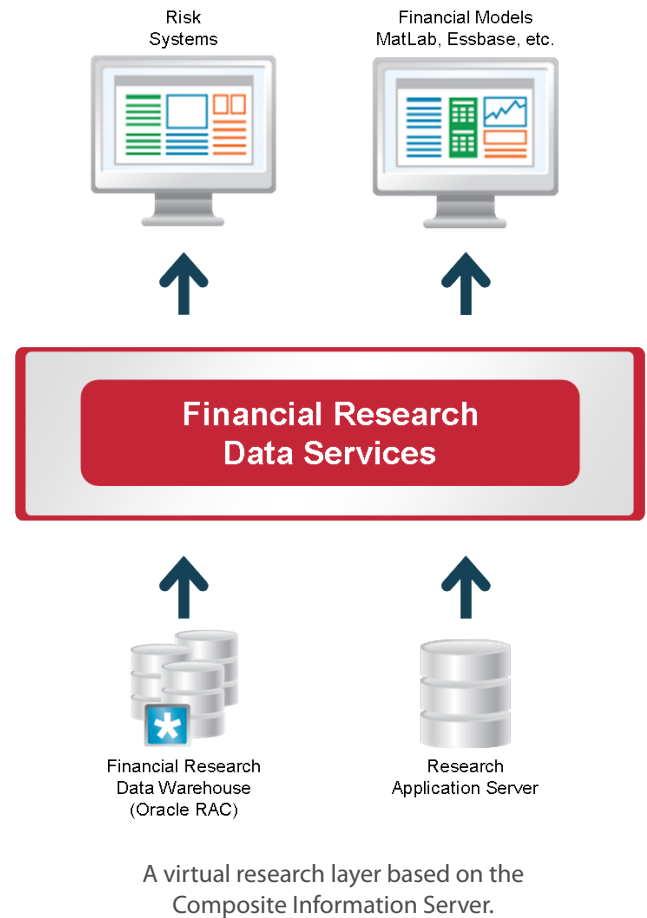
From an enterprise architecture point of view, Composite data virtualization was implemented as a semantic abstraction or data services layer in support of multiple consuming applications. Sometimes called Information-As-A-Service by Forrester Research or SOA Data Services by Gartner, this middle layer of reusable services decouples the underlying source data and consuming solution layers. This provides the flexibility required to deal with each layer in the most effective manner, as well as the agility to work quickly across layers as applications, schemas or underlying data sources change.

Now, query optimization is done within the source data and within the Composite Information Server. This provides the ultimate in flexibility to achieve optimal design-time and run-time results. In addition to Views, parameterized queries are employed in the Composite Information Server in order to have more control over data access. Access and federation performance are critical. Typical selects cover multiple positions across multiple periods, often 100 or more attributes (columns) across multiple source tables.

Now that the Composite Information Server is in use, major improvements are realized:

- Virtualize underlying tables to remove location issues
- Simplify data sources to remove complexity
- Establish a standard set of JDBC outputs from views, or deliver data as a web service as appropriate

Composite procedures are being published both as databases and web services because some commercial packages, such as Clarifi, can only talk to JDBC services.



## THE RESULT

- 25% increase in the productivity of Financial Analysts
- 5% decrease in IT support costs due to fewer rogue marts
- 10% increase in data integrity
- 50% faster delivery of new financial models based on complex research data