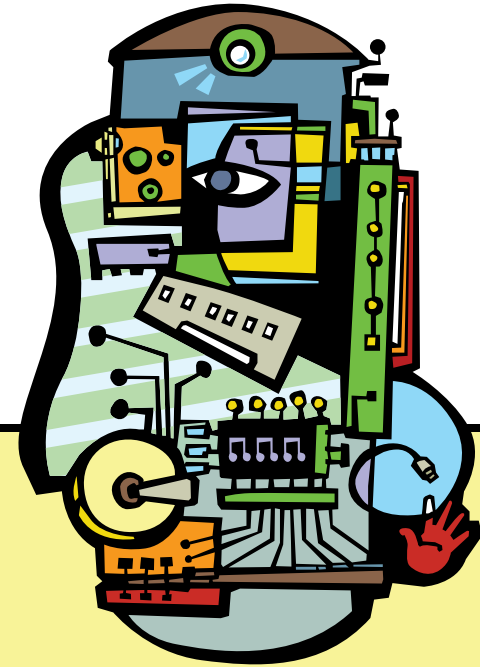


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SOFTWARE *on*
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intelligence from data

S-BASED
SOFTWARE
ALLOWS
QUICKER BUILD
OF QUANTITATIVE
MODELS,
GREATER
ACCESS TO
INFORMATION

A portfolio manager stops by the desk of a quantitative analyst – he has heard reports that a hurricane is heading for the Gulf of Mexico and is worried that the resulting disruption to the oil industry could affect the stocks in his portfolio. He asks the quant to come up with some forecasts of the likely impact. So the quant stops what he's doing, digs out some historical data on previous hurricanes and some statistics on the stock price impact of such events. He runs some analyses and delivers the results to the portfolio manager two days later – by which time the market has already reacted to the news and the original reports have also proven to be a false alarm. In the meantime, the quant's ongoing projects have been shelved.

This is one of the stories that David Smith, a senior product manager with Seattle-based software vendor Insightful Corporation, heard during a recent six-month tour of major financial centers – and he has dozens of others like it. Smith says that many firms see quants as a service or support function, with the business lines as their in-house “customers.” This doesn't always result in an efficient system.



David Smith

Those line-of-business customers are all inclined to see their own needs as the most important. As a result, quants get pulled in a dozen different directions.

“In many financial services firms, quants are effectively a support structure for traders, risk managers and portfolio managers. But quants are also a scarce resource and, as a result, they're often over-worked,” he says.

There are two obvious ways to try and ease the situation. Quants either need to be able to perform their analyses faster – or they need to be able to streamline their workload somehow, avoiding repetitive work and focusing on tasks which require more individual attention. Insightful aims to help in both respects: “What we're working towards, as a company, is to improve the communication between the quants – who build the models and provide the results – and their line-of-business customers who rely on the predictions from those models to actually perform their investments and do their trades,” says Smith.

Insightful's flagship product is S-PLUS – a general-purpose tool built around the S programming language developed by Bell Laboratories in the early 1980s. Unlike other programming languages, like C++ or VBA, the S language was designed specifically for statistical data analysis.

The use of third-party solutions like S-PLUS to support in-house quants has become “ubiquitous” in the banking industry in recent years, says Smith: “The only alternative is to code up the algorithms by hand using a lower-level programming language like C or Java. The problem when creating financial models is that lots of complex algorithms are required and it's just too time-consuming to code them up from the formulas every time. I've known people who do that and it causes lots of problems because what you end up with is a very long, very difficult program which is also very difficult to maintain. When the nature of the market changes you need to update the model, and if you have to dig through reams of code in a low-level language, it's difficult to respond to those changes quickly enough to stay ahead of the game.”

**WITH THE S LANGUAGE, [LIPPER] BELIEVES
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AND MOST IMPORTANTLY, FASTER THAN
COMPETITOR RATINGS AGENCIES ARE ABLE TO.**

The S language enables quants to do their work faster, says Smith: “Because the S language was designed specifically for the purpose of statistical data analysis, quants can create complex predictive models with S much faster than is possible with other languages. As an object-oriented 4GL (fourth-generation language) it includes the fundamental building blocks necessary to build quantitative models: data types like matrix and time series objects, and algorithms like linear regression – which are used in factor models – and statistical distributions, which are used in Monte-Carlo analysis.”

As an example, he points to one of the company's clients – Lipper, a subsidiary of Reuters which analyzes mutual fund data to create their industry-standard fund rankings. The rankings are based on statistical analysis of the historical performance of a fund's different elements, says Smith. Every time a new fund is launched a new program is required which takes into account the specifics of that particular fund. Quants at Lipper had traditionally done all of this using the C language. “Now, they're using S-PLUS,” says Smith. “With the S language, they believe they're able to deliver rankings for a new fund five times faster than before, and most importantly, faster than competitor ratings agencies are able to.”

This kind of argument has won converts throughout the financial services industry. Insightful's website proudly notes that eight of the world's 10 biggest banks (by assets) use the company's software and

services. But it's not just about speed, says Smith. Companies are also responding to the scarcity of quantitative analysts by trying to provide business lines and risk managers with direct access to models. There are different ways of doing this, says Smith – some companies opt to distribute the models as an Excel spreadsheet, which communicates back to a central server where the necessary formulas are stored. Others have created an online interface. Recently, Insightful helped Switzerland's biggest retail banking network – the Raiffeisen Group – do just this.

The Raiffeisen Group is a cooperative banking network, with roughly 470 bank members and branches in around 1,300 cities, towns and villages in Switzerland. The network has a shared resource of quantitative analysts which individual banks can draw on and the impending arrival of the new Basel regulatory framework has increased demand for the quants' services, says Smith. In the past the Raiffeisen banks' risk managers had to contact the quants by e-mail, requesting portfolio risk measures which would arrive a day or two later – but this became an increasingly inefficient way to do things. The group decided that, as many of the analyses requested by the risk managers were relatively routine, it made sense to publish the necessary models to an intranet site and provide users with a simple interface: “Now the risk managers can just go to a separate portal, select the model they want to run, fill in a few fields to provide the parameters of the particular analysis they require, click a button and have the analysis run automatically. The results are delivered on a web page within minutes. Before, they were waiting for days,” says Smith.

The benefits are two-fold, he says – not only do the risk managers get their analyses more rapidly, but the quants themselves no longer have to perform the same, repetitive calculations every month: “Instead, they can spend their time doing new research and publishing new tools.”

The Basel regulatory framework dramatically ups the stakes for banks in terms of the amount – and rigor – of quantitative analysis expected of them. It also delivers an explicit regulatory seal of approval to those techniques. It's just one reason to expect a continuing rapid growth in demand for quantitative analytics, says Smith: “We'll be there to answer that demand by improving the integration of financial data sources and by facilitating communication between quants and line-of-business customers so that companies can improve their decision-making processes, make more accurate forecasts and estimations – and visualize all of this more meaningfully.” ■

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