



Tham Ming Soong, Chief Risk Officer

Positive creativity solves complex risk puzzle

United Overseas Bank CRO discusses interplay between risk classes and developing better risk controls for banking – in near-real time

Industry

Banking

Business Issue

UOB needed to calculate multiple risk factors on millions of loans and security instruments, however the process would take days, which was too slow to give accurate risk insights.

Solution

SAS® High-Performance Computing

Benefits

UOB can: calculate risk at near-real time, take products to market sooner and exit markets sooner, business opportunities and discover business opportunities for a real competitive edge.

Here's a simple way of thinking about risk in banking: All risk is good risk, as long as it's priced right. When you understand that fundamental principle, the importance of accurate pricing becomes clear pretty quickly.

For many of today's large, multinational banks, however, pricing assets and optimizing portfolios are immensely complex endeavors. In fact, we've all witnessed the recent global effects of bad bets on pricing and loan decisions. When you don't get the math right, you don't see the risk and you don't reserve enough capital to protect the bank against potential losses.

But it can take days – literally – to calculate multiple risk factors on millions of loans and security instruments from just one division of a large, global bank – and that's before you start combining credit risk with market risk to get a broader, firmwide picture of an organization's true risk.

Recently, SAS and United Overseas Bank (UOB) have partnered to attack this large computation problem with a high-performance computing solution that combines grid computing, matrix-based calculations and in-database analytics.

UOB's Chief Risk Officer Tham Ming Soong explains how that project got started and how near-real-time risk calculations will benefit the banking industry. Mikael Hagström, Executive Vice President of SAS Europe, Middle

East, Africa and Asia Pacific, leads the interview.

Mikael Hagström: How has the environment in the banking industry changed compared to this time last year?

Tham Ming Soong: The industry has changed quite a bit. We've all witnessed how the current crisis unfolded. Particularly for Asian banks, we found ourselves in a situation where we were overtaken by events that were pretty much out of our control. In the coming months we anticipate increases in regulatory requirements both from the capital and liquidity perspectives. Unfortunately, what banks have not been able to do is to move away from marking off regulatory check boxes to developing internal motivations to create better controls.

Hagström: You head risk management for the whole bank, which includes credit risk, market risk and operational risk. How have the requirements changed in this area compared to a year ago?

Ming Soong: More than a year ago, in 2006, we began reviewing our risk management requirements. Back then, we were looking at integrating our credit, market and liquidity risk frameworks together. Now, the current crisis has pushed us toward a greater urgency to have a better understanding of the interplay between the risk classes. Credit risk traditionally has been managed in a silo, but if you look at how non-performing loans impact funding

“The ability to develop better business analytics can only result in better information for decision making.”

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Chief Risk Officer

requirements, for example, the connection has been grossly understated for the longest time.

Hagström: Why is it important to manage risk and capital allocation on an enterprise level as opposed to a departmental level?

Ming Soong: If you look at particular transactions or pools of transactions by themselves, they can look very profitable. But if you integrate them into the larger portfolio, it can be quite negative for the entire portfolio. Unless we are able to see the interplay, we are not going to attain that efficiency that we are seeking. When we started this journey back in 2006 at the United Overseas Bank, we came up with three basic tenets. One of them is to be able to attain long-term, sustainable growth. To do that, we need the ability to find efficiencies, identify inefficiencies and address those inefficiencies.

Hagström: SAS and UOB started to work together about a year ago on portfolio optimization. Can you describe the problem that we're trying to solve?

Ming Soong: Traditional portfolio optimization looks at asset allocation. When we started looking at portfolio optimization, we looked at it from a fairly different angle. We look at it as a capital allocation problem. UOB operates in 18 countries with subsidiaries in Thailand, Malaysia, Indonesia and China. Capital is not readily fungible across borders. We need to decide from a strategic perspective where we are going to put our investments, and we have to look at

it from a returns perspective, figuring out the expected rates of return for different environments within which we invest. So when we have a portfolio that stretches across five major countries in Southeast Asia, I look at it as no different from a traditional asset management portfolio problem. The only thing is, we're not optimizing the assets. We're optimizing the deployment of capital. So I'm hoping to look at the asset allocation solution and turn it around and say, can we use the same technology to allocate capital?

Hagström: What were your requirements for this project?

Ming Soong: When we started looking for an enterprise risk solution, SAS responded to the RFP. I was originally looking for an open source solution, but when I began to understand deeper the capabilities of the SAS® platform, it became clear that this was a possible solution for us to build our risk management practice. Very often we've seen organizations that have gone in to buy out-of-the-box solutions, but these have a fairly short shelf life. The last thing I wanted to do was to have to go to my Board every five years or so and ask for a whole bunch of money to upgrade our risk systems. I also needed the flexibility to prototype, since we have a lot of ideas that we want to test, and SAS certainly does give us the ability to do that. Since starting this journey with SAS back in the spring of 2008, we came to realize that we have pretty similar objectives, and being of like minds it gives us the opportunity to develop common solutions.

Hagström: How does the near-real-time risk reporting compare to the environment you lived in before?

Ming Soong: When we first ran our credit risk economic capital models using a Monte Carlo simulation, it took us in excess of three days. After working with SAS for an improvement, we did it in about eight hours. But then we started adding the market risk piece and realized it was going to take 11 days. The improvements we saw yesterday with grid computing were amazing. We could run complex calculations in minutes. Of course, we need to balance between the current resources that we have and the grid resources that SAS has at its disposal. In between, there lies a solution that we can work with.

Hagström: What will be the benefits of understanding risks in real time?

Ming Soong: In reality, I don't need real time. What we really need is something near real time. Markets are changing rapidly. The ability to understand market changes before your competitors gives you the additional advantage. It means that we can take products to market a lot sooner or exit markets a lot sooner.

Certainly, the speed also allows us to dream bigger dreams and ask, “What else could we do?” In practice, it gives us a lot more value by being able to do “what if” analyses on the fly. And we have the added computational capacity that would give us that additional edge.

Hagström: If you can do this in two to three minutes, what would that lead to?

How would that change what you are able to do?

Ming Soong: It will enable risk management to demonstrate the effects of large credit decisions to senior managers. They will be able to see how particular credit decisions impact the entire portfolio in almost real time. Also, if we have the capacity and the capability to make complex credit decisions with any degree of accuracy or comfort in near-real time, it could endear us to our customers and create a safer environment for us to operate. [The ability to perform valuation of collaterals more frequently and accurately would lead to the ability to accept narrower margins, build business volume and improve financial performance.]

Hagström: How will these capabilities compare with other banks in the country?

Ming Soong: I am sure my counterparts are also thinking about developing similar capabilities. Our intention is not to be the leader in risk technology. Our intention really is to be able to put available technology to work and to help us be a more financially sound organization.

Hagström: What real problems would the bank solve if you had this?

Ming Soong: For one thing, pricing. With some of the complex transactions that we do in-house right now, we don't have very much pricing capability. We back out a lot of our transactions with other counterparties, and we don't

warehouse very much risk. In doing so, spreads are given away. Being able to price better and being able to understand our risk better allows us to warehouse risk, and we keep the spreads.

Hagström: And as a chief risk officer, how will near-real-time access to risk calculations change your work?

Ming Soong: Oh, tremendously. It will come to a point where it's not enough to be able to control risk. Our approach to managing risk goes beyond just our line of control. We look at how we could deploy risk management resources to help identify business opportunities. We look at how we could deploy risk management resources to contribute to the financial soundness of the organization. I'm altruistic about protecting the broader financial system too. We have a piece of the entire financial sector jigsaw puzzle, and the financial stability of any system can only be as strong as the financial institutions themselves. I can't control what my peers do or don't do, but I certainly can make a contribution through my organization by ensuring, or at least contributing to, the financial soundness of the organization.

Hagström: What about the individual business units? If you are able to provide them near-real-time risk calculations, how would that change their work?

Ming Soong: For one, we can empower the traders with tools to look at how they can shape their portfolios. If they made a decision that has shaped the portfolio in

a way that they had not intended, the unwinding cost involved could be very costly. Another potential is the ability to perform scenario analyses to develop a better understanding of how market changes impact business portfolios, whether it is by business lines or by geography. The ability to develop better business analytics can only result in better information for decision making.

Hagström: What might be the broader industry implications?

Ming Soong: This could offer a lot of opportunities for us to engage the regulators. The regulatory environment has changed to the extent that there will be increased requirements on banks to perform stress testing. Another favorite of the regulators right now is what they term reverse stress testing: getting banks to define the parameters that would break their balance sheets. Such stress tests, while extremely useful, are very intensive computationally.

We need to be able to engage the regulators and say, "This is where our current capabilities are. Infrastructures may not be sufficiently mature for us to do what needs to be done. We recognize why it's important, but could we get some help in terms of subsidies to help us achieve what we as collective stakeholders need to get done?" I know from conversations with my peers that all of us are struggling with this problem. When we started looking at the SAS solution, this crisis hadn't even started to evolve yet. But our experience has certainly put us on the right track. And it

would be worthwhile being able to share this experience with our peers.

We'd like to have the rest of the industry go on this journey with us rather than going at it alone and saying, "We're the leader of the pack." That doesn't really help the industry as a whole, at least speaking from my position as chair of the Risk Management Standing Committee of The Association of Banks in Singapore.

Hagström: Where do you see this solution taking the industry as a whole three years from now?

Ming Soong: I think what the industry needs is positive creativity. I'm very cautious when I use this term because we need to be able to see what available technology there is, and ask ourselves what can we do with such technology? How can we leverage technology to help us do things better? I'll give you an example.

Currently we have about 10 PhDs working in risk management, which is the largest concentration of PhDs in the entire bank. But we are not tapping their full potential. They are pretty bogged down with model validations. I would like to industrialize that work, and I believe technologies are in place for us to do that. Being able to do so will free up those resources to look at research and development work in product development, market development, you name it.

I see this solution as an enabler for the industry to develop better risk and business analytics. With these, we have the basis for moving towards a greater financial and economic stability. When the industry witnesses the capabilities, hopefully, it will encourage a stronger risk culture evolving into financial soundness.

Hagström: The global financial crisis resulted also in a crisis in trust. Do you believe that solutions of this nature can help to establish more of that trust?

Ming Soong: The question of trust will not be addressed by technology alone. Banks and financial institutions are the backbone of the economy. You're right in observing that trust has basically been eroded. If an organization is able to demonstrate that it knows where its exposures are, and it is willing and able to communicate that to stakeholders, certainly that trust can be rebuilt. What is more important to develop, and very difficult to do so, is moral courage. And that's what it takes for a CRO to step up to the front and say, "Hey guys, I think we're going down the wrong track."



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