

Banking on SOA

By David L. Margulius, July 13, 2006

At Wachovia Bank, Tony Bishop and his boss, CIO Susan Certoma, made a huge bet on SOA. Now, they're on their way to completing the platform for innovation the company needed

When you're the fourth largest bank in the U.S., but only No. 14 in a fast-growing business that's crucial to your future, how do you use technology to leapfrog the competition? That was the question facing Susan Certoma, CIO of Wachovia's \$6 billion Corporate and Investment Banking (CIB) division, when she was recruited from a competing firm in 2004.

The surprising answer, supported strongly by her CEO: Rock the boat, change everything, and build a multihundred million dollar, end-to-end, services-oriented development and delivery platform, backed by a business-focused, product management culture in IT.

While many enterprises nibble at the edges of SOA, Wachovia's CIB division opted for a ubiquitous services architecture to support the innovation and efficiency it needed to catch competitors (see also "Wachovia's Steps to SOA Success").

"This was a great opportunity for Wachovia," Certoma says. "This is a very large business growing rapidly, but with not so much entrenched legacy that you couldn't take a vision and platform to a whole new level."

To help realize that vision, Certoma hired Tony Bishop as senior vice president and director of product management. Bishop already learned a lot building SOA platforms for financial services. "IT needs to be flexible, adaptable, scalable," Bishop observes. "It can't just be about modeling my business processes as a system. It has to be holistic."

Eyeing the prize

Corporate and investment banking is a complex business. With dozens of highly customized financial products and services ranging from IPOs and derivatives to leasing, research, advice, and trading, each of the nine business units within CIB demanded its own unique applications, Certoma says. And all of their businesses are intensely competitive, with extreme pressure to get better products to market faster and at lower cost.

Furthermore, financial products require lots of data-intensive modeling, so there's a premium on high performance applications that can give traders and analysts an edge. "It's all about complexity," Certoma says. "There's a great deal of money to be made if you have the top talent and the technology to do it."

The vision Certoma proposed in 2004 was a complete restructuring of how CIB did development, centered around a core of reusable frameworks, components, and services that each of the business units could leverage. Each business had been building similar capabilities over and over -- desktop presentation, data management, workflow management, messaging, and customer information management. "If we did it right, it would give them a lift on productivity," Certoma explains, "and over time it would be cheaper, because the output for our fixed cost would be multiples greater."

Fast forward 20 months, and Certoma's plan is bearing fruit. CIB's Equity Structured Products unit, for example, needed a better "equity volatility" application, to analyze the financial risks of new derivatives products they were thinking of offering.

"A lot of them were modeling deals on Excel, and it would take anywhere from half an hour to a couple hours," Certoma explains. Using CIB's new "volatility surface capability" component -- shared across CIB -- plus new common desktop and server frameworks and a utility grid framework for performance, developers in the Structured Products group were able to build a highly customized, high performance app quickly.

"They put in all their parameters, and within less than a minute started to see all the trending along the screen, the different aspects of the deal like pricing and interest rate scenarios," Certoma says. "It lets them be much more productive, and model more scenarios."

Mapping to the business

To get the SOA ball rolling quickly, Certoma recruited 265 technologists with expertise in SOA and building financial services apps.

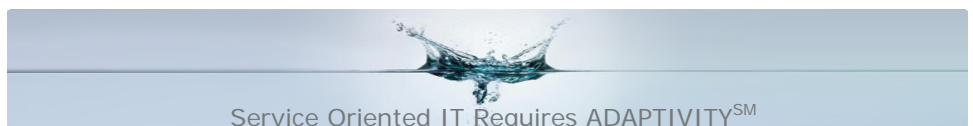
Starting in 2004, she also made sweeping changes to how IT and the business worked together, repurposing CIB's central architecture group into a robust 50-person team with a product management orientation that would build and evangelize an initial set of components and services. Those services would then be available to business unit developer teams, which report to divisional information officers and form the bulk of Certoma's 900-person technology group.

Simultaneously, Certoma set out to strengthen IT's connection to the business and change IT's mindset. "We wanted technology to become an advisor to the business, not an order-taker," she explains.

The first step was a comprehensive strategy-mapping exercise to understand where the business was trying to go and how technology could help, according to Tony Bishop. "The five-month mapping process included business, operations, and technology people ... who really understood the day in the life of the investment banker," Bishop recalls.

For each business and product line, Bishop says, the team mapped the systems supporting the value chain and then asked, "Where do you gain competitive advantage by being able to build horizontal systems and services?"

Based on the three-to-five year business road map, the technology team then began mapping pieces of the business itself to different services, the infrastructure that would be required to run those services, and the accompanying SLAs. "Then we further mapped it down to components ... both business functions like a pricing engine and infrastructure functions like an app server," Bishop adds. "We mapped the dependencies and the reuses across hundreds of systems."



The end result, Bishop explains, was a detailed road map for building components and services, plus a set of standard designs and best practices for future development based on the core platform.

A multilayered approach

At the heart of Wachovia CIB's architecture is a multilayered, loosely coupled stack of services and components. Business services and frameworks (such as those for sales, trading, and order processing) occupy the top of the stack and can be reused across the business units.

These services are supported by underlying infrastructure frameworks and plumbing services such as logical data repositories that support federated queries, metadata management, a prebuilt desktop framework, app servers plus grid and fabric servers, along with in-memory data virtualization services and a service bus.

"It's a multitenant model with components and abstraction," Bishop explains. "You can get to a business or data service through multiple access channels and get consistent execution levels."

One challenge, Bishop notes, was using both open and de facto standards, and then creating a lifecycle in which components could be reused and managed in a best-practices manner. "A lot of our stuff isn't Web services -- that's an implementation protocol that hasn't yet matured," he says. "We've been leveraging mature technology, like Java and .Net, not getting caught up in the buzz."

After a service or framework has been developed, Bishop explains, "we harden it, certify it as a solution stack, build our own customer pieces on top, and then work with the business developer teams to integrate with their business logic."

Getting developers to work with the components has been a major push, Bishop says. "We've had to educate people about what's already built, get them to think about how they build in a componentized environment, how to reuse, how to deploy, how to make it so it's like a software package they just bought -- it's a mindset shift"

To this end, Bishop's team created "our own version of a SourceForge concept, with a version control system and basic workflow management component." The system enables developers to check in and out different versions of components based on a questionnaire and profiling from a service catalog.

One business unit, for example, developed an "equity desktop" application in 90 days that traditionally would have taken six to 12 months to design and build from scratch, Bishop recalls. "They reused our desktop and server frameworks and dropped them on the product runtime utility environment so they didn't have to worry about how it would be managed and supported," he explains. "On the server they defined workflow rules, SLAs, and user priorities -- whether it needed to run on high- or low-cost infrastructure -- and then did the data mapping."

Another business group, Foreign Exchange, built and exposed a componentized foreign exchange calculator application, Bishop recalls, which was later reused by a completely separate division, International Payments and Trade.

"This is going to be an ongoing lifecycle," Bishops predicts. "As more and more services and components come on, and the better job we do educating, people will go, 'Why would I even bother wasting any more time when I can just use the new stuff, build it better, it's dynamic and just works right?' That will be the measure of success."

The self-monitoring SOA

A central feature of the Corporate and Investment Bank's services-oriented platform is its focus on measuring and managing usage and performance like a utility, Bishop explains. "This is a franchise; we're making it repeatable and scalable. You get your burgers, fries, and Coke every single time. You plug it in and it works."

In addition to managing services contracts and making sure they get fulfilled ("guaranteed execution"), the system tracks runtime usage -- how many processes and transactions went across, and on top of which components and services. "We want to know: What was the efficiency contribution?" Bishop asks. "Were 100 person-days reused? Who's consuming and how are they consuming? ... Like a CFO would look at it."

Also, CIB's portfolio management tool ties component contributions and reuse to the MBO (Management by Objectives) metrics of the business unit developers and system leaders.

So far, according to CIO Certoma, the \$100 million-plus, per-year investment appears to be paying off. "After they saw our execution last year, they doubled our budget this year," she says. "And there's never endless money -- that means they had to be conservative in other areas."

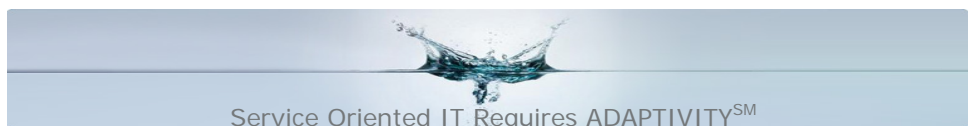
Certoma points to such successes as three multimillion dollar contracts won recently by CIB's global financial institutions group, where a key selling point was the bank's superior technology architecture. "That business is a servicing business; we provide financing for import/export," she explains. "Our technology becomes visible on the client's desktop and takes out a lot of the manual reconciliation work. When they see how our technology provides integration and interfaces across their disparate systems, that's a huge win, because it makes their processes cleaner and error-free."

Certoma is quick to add that deploying an enterprise-wide SOA in a multibillion dollar company accustomed to siloed development is rarely a picnic. "It's like a rollercoaster," she says. "You go up and down, throw up a couple times, and at the end of the ride, everything's great."

Working to overcome mistrust is one key lesson learned, Certoma says. "You have to have an unwavering commitment to your vision, because it will get hard," she explains. "Getting the business groups to trust another group to build something for them -- it was not seamless, it was not smooth. You have to stick it out."

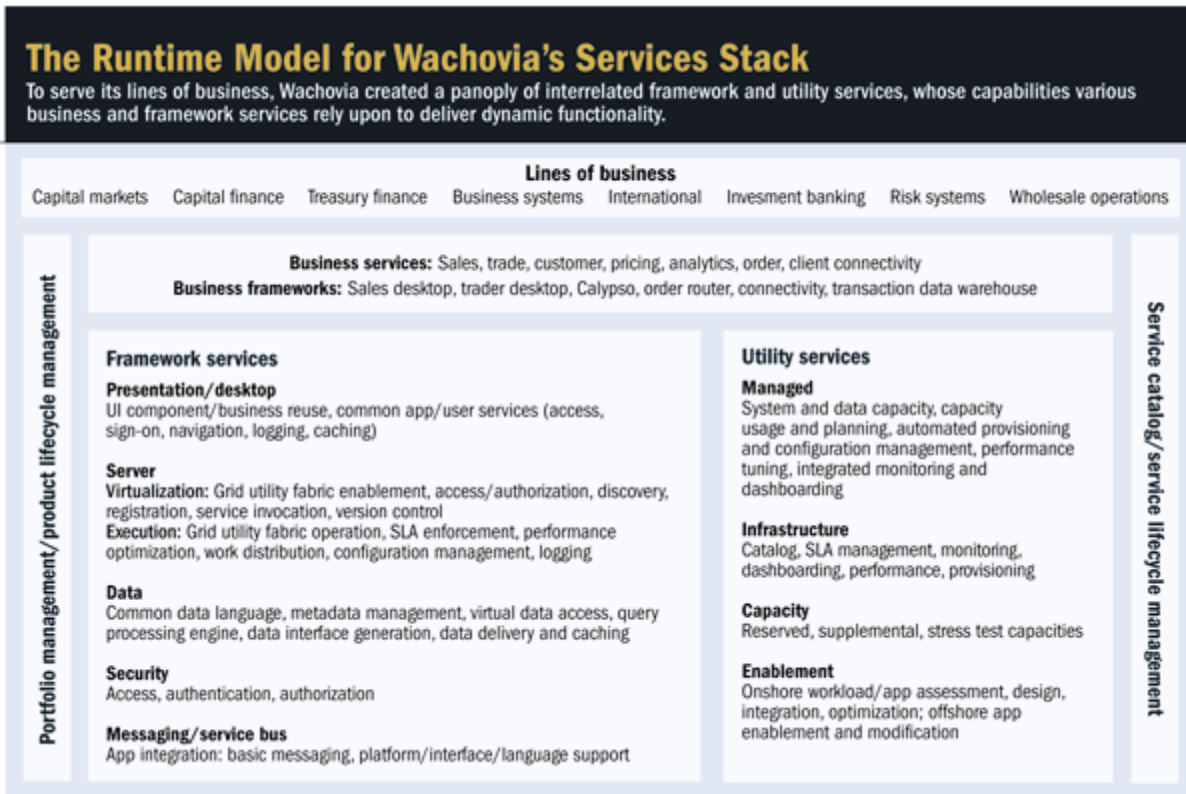
Relentless communication with the business is also crucial, Certoma adds. "We went to the business and told them exactly what they'd need if they wanted to be an A-player and what we were doing to get there ... no secrets. We have to sell and market this every day."

Also, Certoma adds, the technology team has to understand the business deeply to have credibility. "If the technologist can say, 'Have you thought about trading



this way, because then you can make this kind of money, and I can give you these tools to do that?,' that's where the magic happens." Certoma notes that she herself sits on the trading floor in New York, rather than in an office. "I'm always on the floor."

As with any initiative, it all comes down to delivering on your promises. With SOA, that also means defining and meeting realistic interim goals. "An SOA is not a six-month type of effort, but you have to deliver something every couple of months," Certoma says. "This type of business can't sustain waiting for a year or two to get solutions. We have short term deliverables that are pushing us all the time."



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