



Ron Lang

Ron Lang is SunGard's chief product officer. From 2000 to 2005, he was group chief executive officer of SunGard Financial Networks, Brokerage and Trading Systems. Mr. Lang joined SunGard in 1997 through its acquisition of Infinity Financial Technology, where he was vice president of marketing. Mr. Lang spent the prior 20 years in Silicon Valley where he held a variety of management roles at both startups and major firms such as Sun Microsystems and Apple Computer.

Dear Customers and Colleagues:

Imagine if we could bring new products to market faster. Imagine if we could integrate our products more easily. Imagine if we could choose which platforms to deploy on. Well, with SunGard's Common Services Architecture we can.

For anyone who's wondered what private ownership of SunGard would mean for customers, it would be hard to imagine a more positive first sign than this new initiative. SunGard's Common Services Architecture (CSA) reflects a commitment to long-term, customer-focused investment in our company and its intellectual assets, an investment we are now much more strongly positioned to make.

But I'm letting my zeal get ahead of me. First, let me introduce CSA with a definition and description.

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INSIDE

At DevCon, SunGard's internal conference in Philadelphia in August, nearly 200 SunGard developers and product managers met in order to be introduced to one of the most important initiatives in SunGard's history: the enterprise-wide adoption of what's called the Common Services Architecture—SunGard's strategy for open, collaborative development. Three SunGard leaders managing the adoption and evolution of the initiative met for a roundtable discussion. SEE PAGE 8.

INTRODUCING

CSA

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At the heart of CSA is a set of common technology standards and development methods that enable software developers across our company to work together efficiently and build on each others efforts.

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What is CSA?

The SunGard Common Services Architecture is two things: a process for collaboration and a technology framework. Together, this process and framework add up to a smarter way to develop smarter solutions.

At the heart of CSA is a set of common technology standards and development methods that enable software developers across our company to work together efficiently and build on each other's efforts.

At first, the full impact of this statement may not be clear. To appreciate how groundbreaking this is, remember that SunGard is a company that has grown by acquisition, in fact by more than 135 acquisitions to date. The result is that we offer a portfolio of applications unmatched in its breadth and depth, but that many of these applications have been unable to speak with each other. Understandably, they were built to differing standards. In fact, if you work from the assumption that our developers have had the choice of at least seven operating systems, eight programming languages, eight database management systems, six Web servers, and four code repositories, the resulting heterogeneity is no surprise. These choices yield more than 10,000 conceivable technology permutations.

But that's now changing. Going forward, SunGard will develop new systems based on a set of common standards, and we will harness the natural release cycles of many of our legacy systems to bring them into compliance with these standards as well.

Building Blocks and Benefits

This publication and many of the SunGard World sessions will illustrate the benefits that CSA will help bring to you as a customer. By way of preview, let me simply say that CSA is a service-oriented architecture. As such, it will allow us to create component-based solutions from flexible building blocks. This will mean the rapid reuse of components that now need to be developed from scratch for each application. The end result will be faster time to market, far more agile integration and interoperation of SunGard products and platform independence.

SunGard is going to expose the value embedded within the hundreds of millions of lines of code we've created, helping both SunGard and our customers to reap the rewards.

Faced with this remarkable promise, I can imagine only one response you could have, particularly if you've earned your stripes in the prove-it-to-me world of IT: "That's fantastic. How do I know it's for real?"

Well, SunGard World will be a great opportunity for us to show you. You will see demonstrations of products we've already built with, and migrated to, CSA and you will have the opportunity to sit in on technology "deep-dives" where we'll truly get into the details.

For now, let me say that CSA is not a dream or plan, but a reality that has been taking shape within our organization since 2002. We come to you having tested our approach, having built the infrastructure, and having earned the buy-in of some highly discriminating individuals—from our new owners, our senior management, and our business group executives, to the engineers who wrote the applications you're running today.

More Zeal

Before closing, I have to underscore how exciting an initiative CSA is for SunGard and our customers. It's been no secret that SunGard needs to improve integration of its solutions and present itself to customers and the world as a single entity. The question has been how. Or more precisely: How can we achieve the unity we seek without compromising our core strengths—the independence and entrepreneurial spirit of our business units, who have met the needs of the customer segments they serve and built our success to date?

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For the first time, technology and business opportunity have come together—along with some fresh insights—to provide the right path forward. This path, the CSA, will transform the way SunGard works, yet it will leave our organizational chart untouched. As a businessperson who has managed product lines, headed up P&Ls, and spent years focused on customer needs, I see this as the brilliant advantage of CSA. Our technologists will point out other advantages that they find just as compelling.

I encourage you to learn more about CSA. My experience has been that as people learn more, they see the strength of the ideas and rapidly become advocates. In fact, the most gratifying part of the CSA experience for me, as one of the program's leaders, is the extent to which CSA sells itself. It's a great idea acquiring a momentum of its own.

Most importantly, it is a win-win concept. It will help SunGard to bring more value to you, our customers, and allow us to emerge a stronger company as a result.

Thank you for your indulgence as I've evangelized. I hope your experience at SunGard World is informative and most enjoyable.

Ron Lang



Chief Product Officer

CSA
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CSA

I N T R O D U C I N G

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CSA solutions are compatible with any major operating system you might choose, as well as any database management system, Web server, integration platform, messaging service, and programming language. This offers customers a significant degree of flexibility.
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■ With its new Common Services Architecture, SunGard is launching a smarter way to develop smarter solutions. CSA is transforming the process by which SunGard develops software, multiplying the opportunities for its systems to work together, and helping bring significant new value to customers. Here's how.

To understand CSA and its benefits, it helps to start with a simple question: Over the years, how many times have SunGard developers written sequences of code to handle user authentication?

Darren Wesemann, chief technology officer of SunGard's financial systems business, offers this answer: "Let's just say we have well over 250 applications, most were developed independently of each other, and it would be a rare example that did not require some kind of user authentication feature."

In other words, over the course of SunGard's history, the company's developers have dedicated considerable time replicating each other's efforts to produce this routine deliverable—and similar examples abound.

Of course, there's a reasonable explanation. Many of the 250 applications Darren refers to were first released before SunGard acquired the companies that developed them. Others took shape later, but within the silos of independent business units, focusing on specific business processes or narrow segments of the industry. And, to be fair, this approach has worked. Powerful and reliable, SunGard solutions pervade the world of financial services.

However, in 2002 SunGard began pioneering a better way, one that will not only help reduce duplication of effort, but also speed time to market, make SunGard's solutions far easier to integrate, and help yield higher quality software. That approach is SunGard's Common Services Architecture, or CSA.

What is CSA?

CSA is two things. First, it's a collaborative development process—a way of creating software that allows SunGard product development teams around the world to contribute to, and benefit from, each other's work. Second, it's a technology framework—a flexible infrastructure, based on mainstream open standards, that can support the full breadth of SunGard's solutions.

"From a customer's perspective," says Darren, "there are several key qualities that distinguish CSA. Probably the single most important is that it's agnostic. CSA solutions are compatible with any major operating system you might choose, as well as any database management system, Web server, integration platform, messaging service, and programming language. This offers customers a significant degree of flexibility."

A second key feature of SunGard's new approach is "pluggability." CSA is a service-oriented architecture. As such, it is based on the concept that developers can break applications down into sets of discrete functions, build each of these as an independent component, then assemble the components in flexible combinations to create customized composite applications.

The services, or components, of CSA fulfill many routine functions, such as scheduling, messaging, and report writing. They also include some highly sophisticated capabilities close to the heart of the software's value, for instance, rules-based engines that can support decision-making in a variety of contexts. And that brings us to the third key feature of CSA, its openness. Once built and certified, CSA components can be re-applied in many applications. They reside

in a repository available to every SunGard software team. “The idea,” says Darren Wesemann, “is that developers continually reuse and improve each other’s work. We’ve established a democratic process and a set of common technical standards that let this kind of cooperation and communication happen in a way it never could before.”

One result of this breakthrough is that no SunGard developer may ever again need to write a user-authentication function—at least not from scratch. Instead, they can borrow that component from the CSA repository, refining and extending it as needed. CSA project team members estimate that this kind of reuse will eliminate 40 percent of the development time associated with a typical project and a significant portion of the cost.

“Who wants to write a user authentication sequence any way?” asks Darren. “If we’re developing trading software or employee benefits software, we should be focusing on trading or benefits functionality. We should be adding business value, not reinventing the ‘plumbing.’ And now we can.”

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CSA is our answer to a question we’ve heard too often from customers: Why isn’t it cheaper, easier, and faster to make SunGard Systems work together?
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Have You Ever Remodeled Your House?

SunGard chief product officer Ron Lang endorses the description of CSA as a smarter way to develop smarter solutions, but he offers another definition as well. “What is CSA?” he says. “It’s our answer to a question we’ve heard too often from customers: Why isn’t it cheaper, easier, and faster to make SunGard systems work together?”

In summarizing the pain customers feel, Ron cites a familiar statistic: Most IT departments allocate only 30 percent of their budget to buying or building the solutions they need; the remaining 70 percent goes to integrating those systems.

“Given our footprint in the financial services industry,” Ron says, “our success in integrating our solutions with each other and in enabling them to interoperate with other systems has an enormous impact. Easier integration is the Holy Grail and with CSA it’s finally within reach.”

CSA’s power to meet the challenge of integration lies in its three defining features: agnosticism, openness, and pluggability. Because CSA solutions are so broadly agnostic, they can deploy into a full range of technology environments with very little customization. Because CSA features open standards, every CSA solution speaks the same language and exchanges data in precisely the same formats. And because CSA components are pluggable, they connect with each other.

In fact, says Darren Wesemann, the idea of pluggability reframes the whole issue of integration. “The question may no longer be how to connect separate systems,” he explains. “With pluggable components, you are deploying composite applications. It may become somewhat arbitrary even to say where one application starts and another ends.”

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To illustrate the benefits of CSA from the customer’s perspective, Ron Lang offers an analogy that will resonate with any homeowner. “Running an IT operation is like remodeling your home,” he says. “The problem is not finding good craftspeople, it’s getting them to work together. It’s getting the electrician to talk to the cabinetmaker, and getting the cabinetmaker to put a hole in the right place for your electrical outlet. This doesn’t happen without a good general contractor—and it’s never going to happen if the electrician is measuring in inches and the cabinetmaker is measuring in centimeters.

“Well,” he continues, “CSA is serving as SunGard’s general contractor. It’s giving all our craftspeople—our developers and business analysts—a set of common tools, methods, and components. And with its open standards, it’s getting us all to measure in the same units.”

The Technology

Since SunGard’s earliest efforts in 2002, Darren Wesemann has played a central role in the project and is chief architect of CSA. As he now helps explain it to customers, he says the most common question he hears is “how?” “People sense it’s a great idea with a great pay-off,” Darren explains. “Now they want to know how we’re going to make it happen.”

Darren’s response is that SunGard is moving pragmatically and carefully: “This is not a company that takes risks when it comes to meeting customer needs and deadlines,” he says.

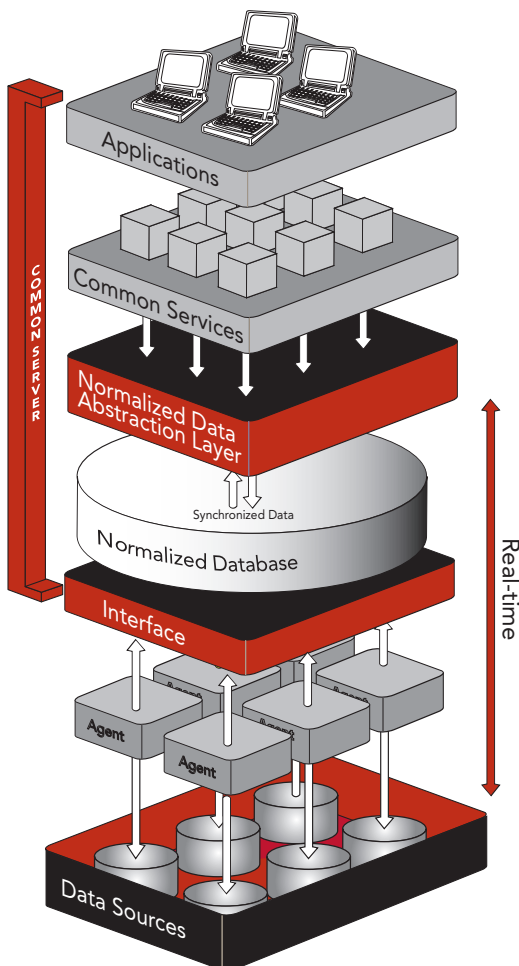
An important part of this pragmatic approach is a plan that articulates four levels of CSA adoption. These allow for SunGard’s products to migrate to CSA standards in stages. Level One, “Autonomous Common Services,” includes components of legacy applications that have been wrapped in the most basic way to plug and play in the CSA framework. At the other end of the spectrum, Level Four, “Native,” describes applications developed to CSA standards in every aspect.

“The point,” Darren says, “is not that one level is better than another. It’s that different levels of adoption make sense for different products, that each product can reach its target state in stages, and that there are steps we can take immediately to begin releasing value from SunGard’s applications.”

SunGard’s approach to CSA adoption is indeed careful and gradual, but it would be a mistake to think that the project is moving slowly or that it’s still in the planning stages.

“CSA is real,” says Darren. “The standards are all defined. The methodologies are established. A substantial infrastructure is in place. And we have CSA-compliant applications up and running today. The earliest of these were developed three years ago. So as we go public with the CSA strategy, it’s with proven results in place.”

Darren points to a growing list of certified components in the CSA repository, to adoption plans in place for major SunGard products, and to demo solutions from each SunGard business segment being presented at SunGard World.” We will be sharing projects involving InvestOne, PowerImage, BRASS, FRONT, and other SunGard primary brands,” he says. “These are all successful efforts that highlight CSA’s promise of efficiency.”



A New Way of Working

Members of the CSA team emphasize that the big news concerning the project is not just how the technology will work, but how SunGard's people will work. "CSA is based on principles of open development," says Darren Wesemann. "It's not just about consistent standards. It's about the collaboration those standards will allow and the value that collaboration will unleash."

Darren explains that the CSA sets up a democratic process through which representatives across SunGard debate and decide issues concerning product components and how they are developed. "This is a living framework," he says. "It evolves to meet new needs, and the way it evolves reflects the collective intelligence of people across this organization."

Ron Lang underscores the impact of this collaboration. "You will see some piece of code introduced that does what it's supposed to in 100 lines. It will sit in the CSA repository for review and another developer will come along, realize it does what he needs except for one additional thing, and he'll add 20 more lines. Now that 120-line code meets the needs of two independent developers. Then someone else might come along and figure out how to do the same thing in 50 lines. Working collaboratively is more complex than working alone, but it can yield stronger results."

The CSA employs the techniques of agile development. Projects move through a rapid series of iterations with nightly builds. "We used to go through months of mapping and documentation at the outset of a project," Darren Wesemann explains. "We tried to lock down every detail before writing a line of code. Now we move forward much more quickly. We used to build a product to last. Now we build it to change."

A Stronger SunGard

In the technology and the development approach it embraces, CSA is clearly in the mainstream of current best practices. It is also a solution uniquely appropriate to SunGard and to this point in the company's history.

"Other major software producers are moving to common frameworks of one kind or another," says Ron Lang. "What makes CSA groundbreaking is the number of products and platforms it will ultimately bring together. To my knowledge, no one has taken on anything this complex in scope."

Achieving this benefit in full may not have proven possible if not for the agreement, finalized in the third quarter of 2005, through which a leading group of private equity investors completed a buy-out of SunGard, returning the company to private ownership.

"SunGard performed very successfully as a public company," explains Ron Lang. "But like all public companies, we faced the need to focus on quarterly results, and that presented a bias against long-term initiatives and long-term investments."

"Our new owners know our business. They recognize the return this investment will yield, and they appreciate that it will take more than a couple of quarters to see that return. But the ultimate impact of CSA is clear: both our owners and our customers are going to see a stronger SunGard, delivering greater value." ■ ■

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Darren Wesemann

(darren.wesemann@sungard.com) is chief technology officer of SunGard's financial systems business as well as the chief architect of the Common Services Architecture (CSA) which he conceived after a meeting with a leading SunGard customer. He now manages the technical aspects of CSA. Darren joined SunGard in 2002 as chief technology officer of the Online Investment Systems group (now part of SunGard Wealth Management & Brokerage).



Kenneth Kunin

(kenneth.kunin@sungard.com) is the vice president, product management for the core components of CSA. He works with both product managers and system architects throughout SunGard to leverage CSA and coordinate efforts. Kenneth joined the company in 1999 when his previous employer Exchange Market Systems was acquired by SunGard and has helped guide the evolution of the CSA since 2003.



Don Wood

(don.wood@sungard.com) is chief product management officer of SunGard's financial systems business. He works with SunGard product managers on the business issues relating to CSA—quantifying the value of SunGard contributions to CSA and helping ensure SunGard is delivering value to customers. Formerly the chief operating officer of SunGard's Trading & Risk business unit in London, Don began working on the CSA initiative in March 2005.

WHAT'S A GOOD DEFINITION OF THE COMMON SERVICES ARCHITECTURE?

Darren: CSA has two key elements: It's a process for collaboration that seeks to leverage SunGard's resources in an open, flexible way. Second, it's an open, service-oriented framework—a technology infrastructure—designed to facilitate collaboration among developers and to make it easier to reuse software components and assemble better customer solutions.

CSA begins with standards. It establishes a common development process that enables organized group efforts and automates testing, bug tracking, and project management. And it involves a “reference implementation,” a library of reusable software components that are fully agnostic with respect to hardware and software platform .

WHAT WAS THE GENESIS OF CSA AT SUNGARD, AND WHY IS IT SO IMPORTANT TODAY?

Darren: I started working on the idea of CSA in 2002. It was—and remains—a well-known fact that SunGard is a hugely diverse enterprise and that we have been facing two issues: fragmentation (lots of disparate applications) and replication (lots of “reinventing the wheel”). SunGard has traditionally operated as a company with multiple “silos,” with individual business units focused on their own solutions and their own customers. Frankly, we have not been that good at cross-business-unit collaboration. But that's exactly what our customers want and need, and we have come to the realization that we can—we must!—leverage our breadth and depth to help generate benefits for our customers and our company.

HOW MUCH “CURRENCY” DOES THE IDEA OF A COMMON ARCHITECTURE HAVE? ARE THE BENEFITS OF A COMMON ARCHITECTURE WELL-KNOWN? ARE OTHER COMPANIES PURSUING THIS APPROACH?

Darren: The reality is that siloed development is fairly commonplace, especially within large enterprises, and it's an issue that many companies—including our customers—are trying to deal with. Some technology vendors have announced they are pursuing collaborative architectures like CSA, but we have been using it for two years, day-in, day-out, in multiple areas of SunGard. We believe we are ahead of this particular curve.

Kenneth: It's important to note that virtually nothing about CSA is “experimental.” The underlying infrastructure is open and standards based; the methodologies CSA incorporates are similar to those used by tens of thousands of developers. CSA is not about rewriting millions of lines of code; it's about making it easier and more effective to build composite, component-based applications that take advantage of today's major technology standards.

HOW DOES CSA FACILITATE INTEGRATION, A KEY CHALLENGE FOR SUNGARD AND ITS CUSTOMERS?

Darren: Let's say two individuals from two different SunGard business units are collaborating outside of the CSA framework. Long before they get down to the development of the actual functionality of the application, they have to figure out the underlying “plumbing”: how the bits are going to flow, what the interfaces are going to look like, etc. That can actually take weeks or months to determine. But in a standards-based environment like CSA, all that plumbing is defined upfront. Here are the standards, here are the libraries, here are the ways you can connect the dots. With all that out of the way, the development team can focus purely on the business logic, the application, the functionality, and forget about the infrastructure—except when you need to extend the plumbing. That's why open development is powerful.

Don: And that's also why open development works very well within SunGard. We can use our internal resources—our excellent understanding of the business issues our customers face and the industries require—and focus our efforts on where we add value without having to worry too much about the plumbing. In effect, CSA says: “Don't worry about how somebody logs into the app. Don't worry about how the screen is designed. Worry about the functionality and how it addresses a customer need or an industry requirement.”

Kenneth: Remember, too, that SunGard as a whole is continuously enhancing the infrastructure plumbing. Which means that every customer may get the benefit of the infrastructure, not just a single business unit's customers.

ELIMINATING DUPLICATION OF EFFORT IS ONE OF THE STATED OBJECTIVES OF CSA. HOW BIG AN ISSUE IS THAT? AND HOW DOES REDUCING DUPLICATION BENEFIT SUNGARD CUSTOMERS?

Darren: When I began exploring the idea of a common architecture, I estimated that a full 40% of what we're doing on a daily basis—at a minimum—was duplicative. For example, when you look at SunGard as a whole, you'll find five different logger applications. Virtually every solution requires a logger, but we only need one that can be used across the entire enterprise. Obviously, if we can focus on one logger, it cuts down on our development effort.

But the more interesting benefit is when you have a commonly and collaboratively developed component, you get a better component. It's like the wisdom of crowds. One developer or team may create a very good logger functionality. But when multiple individuals and multiple teams are focused on a single component—when you can collaborate in a well-organized way—the collective intelligence is better than even the smartest individual in the group. You'll get one incredible logger, easily integrated in multiple apps, instead of five very good loggers. For customers, that kind of focused improvement is very clearly a benefit.

Kenneth: We're trying to instill the idea throughout SunGard to make the core components as "generic" as possible (but, obviously, still sophisticated) to foster the idea of reuse. We want every development team to think beyond their individual horizon and ask themselves: "How can my product be used elsewhere? How can I share this?"

And we've demonstrated that a common development approach helps smooth the entire process. Everyone is on the same page, helping projects get done faster and better.

HOW CAN CSA HELP CUSTOMERS INTEGRATE MULTIPLE SYSTEMS?

Darren: The beauty of CSA is that the standards on which it is based are extremely popular, such as LDAP, WC3, Oasis, and others. These are the same standards that some of our competitors are using and that our customers are using. Still, integration can be a complex challenge, so to simplify matters, we've defined four different levels of integration or adoption. Which means that a SunGard product manager (and potentially even customers) can simply look up a component in our CSA Registry and say: "Aha! This plugs into this!" They can see how things are connected or can be connected, without having to worry about the technological nuts-and-bolts underlying the connection.

Don: To put it slightly differently, CSA means that most of the integration effort is already done. And as CSA gets adopted throughout SunGard, the challenge of integration should become easier and easier.

YOU'VE BEEN TALKING TO SUNGARD CUSTOMERS ABOUT CSA. WHAT ARE SOME REACTIONS? CONCERNS?

Darren: One of my first presentations about CSA was to a big financial services customer—a company that has 18 SunGard products in its technology portfolio—and the reaction I got underscored the need for CSA as well as the skepticism. The IT manager said quite bluntly, "We are tired of having to integrate SunGard's own applications."

Well of course we knew that was a source of pain for customers, so after acknowledging that, I walked through the underlying idea of CSA: the common infrastructure, a process that facilitates collaboration, and the explicitly articulated levels of adoption. And I made the point that we are not rewriting code at the wholesale level. I believe most of my audience got the idea; their biggest question was "can you do it?" Or as one person put it, "how can you ever get a company like SunGard on the same page?"

I have a great answer: We are doing it. We've been using CSA in parts of SunGard since 2002, and we have a number of CSA success stories. CSA is most definitely not an experiment.

Don: It's important to acknowledge that CSA does not exist everywhere within SunGard today, but we will get there. The good news is that customers will benefit throughout the process. Today, CSA can help make it easier to manage applications and to produce applications with more value. It can help reduce the costs of integration, training, and support. And we are convinced that the benefits will increase over time.

HOW ARE SUNGARD BUSINESS UNITS RESPONDING TO WHAT MUST FEEL LIKE A PRETTY SIGNIFICANT "SEA CHANGE" IN YOUR DEVELOPMENT PROCESS?

Don: Our old structure and culture—the decentralized, siloed model—didn't incent developers to work together, but most developers are jumping onto the CSA bandwagon with great enthusiasm. They are now looking for ways to work together, looking for ways to add value to customers.

CSA, SOA and other TLAs (three letter acronyms)

CSA takes the idea of Service Oriented Architectures (SOA) to the next level of evolution. Following are five important differentiators of CSA to common SOAs:

1. **CSA is agnostic:** There are a number of well known commercially available SOA-Infrastructures (like IBM Websphere, BEA, Tibco, etc). Like CSA, these are comprised of a large number of servers and services (like application servers, Web servers, loggers, etc) - some of them are open source components, others are proprietary. In a commercial SOA, these components are bundled together in a proprietary combination. The difference with CSA is that each of our components is wrapped in a shell which makes them agnostic to what they are linked to. The consequence is that SunGard can deliver a configuration of any components on an architecture defined by the customer. Thus there is no need for custom interfaces with every deployment.

2. **CSA has been designed so it can handle both the publish & subscribe model (event driven) as well as the request & response model (service driven).** Most commercially available SOAs focus on one or the other, and a few SOAs allow for expensive message bus add-ons). Having both models out of the box is very advantageous in complex applications. A typical example is trading where a trade confirmation is usually handled as a service (you request a confirmation) while a margin call is usually handled as an event (the market price changes and triggers a margin call).

3. **CSA uses a finance-oriented normalized data model which supports all major commercially available relational data base management systems (like Oracle, DB2, etc.) and thus is database-vendor agnostic.** SOAs generally do not define a data model at all but provide adaptors because they are intended to be very generic across industries. Sharing core data model functionality (e.g. security master, counterparty information) across applications simplifies data sharing and synchronization.

4. **CSA offers both commonly used models for data integration: it can replicate data into a central data warehouse or it can leave the data where it is and get it on demand (known as the EAI model).** Most commercial SOAs support only one model or neither.

5. **CSA incorporates a customizable User Interface shell designed for financial applications.** No other SOA has a User Interface for applications. Combine this interface capability with the common administration console and the consequence is that SunGard can deliver entire applications in composite form - components can come from very independent and geographically dispersed teams; but when you put the building blocks together the composite application looks and feels and acts like a fully integrated application.

CSA IN PRACTICE

SunGard's Common Services Architecture (CSA) has enabled "the best minds to be shared across all of SunGard," says John Macllwaine, chief technology officer of SunGard Institutional Asset Management & Securities Servicing.

SunGard colleagues involved in the pilot projects to kick-off the CSA initiative share Macllwaine's views. A collaborative development process and technology framework, CSA will help SunGard to more effectively manage its vast portfolio of software in order to leverage this resource and enable faster development of and integration between SunGard products.

In addition to Macllwaine's group, there are pilot projects in each of the other financial systems business areas – Trading, Treasury & Risk Management, Benefit Administration & Insurance, and Wealth Management & Brokerage.

Andrew Cinquina, senior vice-president, BRASS development in the Trading, Treasury & Risk Management business says one of the main benefits of the CSA approach will be that "over time, there will be more sharing of ideas within the company that will lead to less duplication."

While each of the pilot projects has unique characteristics, the overriding theme of CSA is collaboration, and each of the pilot projects offers much greater opportunity for integration of different SunGard products than previously possible.

Paul Erickson, a business unit president in SunGard Wealth Management & Brokerage says involvement in CSA has enabled him to come into day-to-day contact with people from other business areas to exchange ideas.

Erickson is in charge of developing the EthicsMonitor product which will be fully native CSA compliant. EthicsMonitor will help financial firms to monitor, oversee and maintain records on employee activities including securities trading, the receipt or giving of gifts, outside business activities and compliance with a firm's code of ethics.

"Wealth Management & Brokerage has a range of surveillance products, but EthicsMonitor is a new area for us. That is one of the reasons it was ideal for the CSA project," he says.

Not only is EthicsMonitor a "great fit" for the CSA approach because it is new, says Erickson, but it is also a product that can provide value to a wide range of SunGard customers if integrated with the SunGard application they use. "CSA helps make that integration easier," he says.

One of the guiding principles behind the CSA approach is the ability to reuse components. Erickson says his development team has already benefited from this, as capabilities such as entitlement, log-on and hierarchical structures are a part of the existing CSA framework. In fact, Erickson estimates that CSA provided about 65% of the code that needed to be written. "We didn't have to redo this work; we were able to leverage what already has been done by other business units."

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ANDREW CINQUINA
BRASS

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EACH BUSINESS AREA HAS IDENTIFIED A PILOT PROJECT TO 'GET THEIR FEET WET' WITH CSA. 'SHARING THE BEST MINDS OF SUNGARD' HAS ALREADY GENERATED BENEFITS

Macllwaine has also found the ability to reuse common standards of real benefit in his team's developments of InvestOne Enterprise, SunGard's leading global investment accounting solution. "More than three years ago, we defined a technology roadmap to evolve to a services oriented architecture," he says. "This roadmap shared a number of objectives with CSA – to facilitate better integration and common standards reuse. That was why we jumped at the chance to be involved in CSA because we saw that it was parallel with and complementary to the work we were already doing on J2EE-based messaging standards across our group," he says.

Macllwaine's group is focused on InvestOne Enterprise, which is CSA Level One compliant. Level One refers to legacy components that can be wrapped as a Web Service (where a services oriented architecture already exists as in this case), reused globally and deployed in a variety of environments.

"While our involvement with this initiative began only recently, we have already made contributions to the CSA repository and have utilized existing CSA components as well. The aim is to expand development and CSA participation across other products within our group, fostering improved integration and shorter time to market for our clients," says Macllwaine.

The development work being undertaken by Cinquina and his team at Trading, Treasury & Risk Management also has the potential to be shared across many other SunGard business units.

The BRASS Algorithmic Trading Gateway will provide access to algorithmic trading destinations. "The industry is moving towards algorithmic trading because it enables people to work orders electronically throughout the day. There is a huge demand for algorithmic trading destinations and providing a gateway into these destinations would eliminate the need for customers and other SunGard business units to build their own infrastructure and test connections," he says.

The gateway was also a discrete service that could be developed to CSA Level One standards. It enables the team at BRASS to "get its feet wet" with CSA, says Cinquina. The gateway will provide access to the algorithmic trading desks at several leading firms. It adheres to each of the firms' order entry terminology and their named parameters including start and end times, participation rates, time and pacing controls, price thresholds and limits, and passive/aggressive settings.

Cinquina says the gateway will provide a vital component to SunGard's trading and buy-side solutions. "Our involvement right now with CSA has been focused on building services to contribute to the overall framework. However, it has also allowed us to see more of what is being contributed and proposed by other SunGard business units," he says.

Mats Lillienberg, chief technology officer at SunGard's FRONT ARENA business unit, says a number of product development teams have expressed interest in the FRONT ARENA's enterprise service bus, which utilizes industry standard-based means of integration. "This is something that we intend to make a part of the CSA framework. There are elements on the technology side that we can share with other business units, as well as functional components."

Lillienberg says reuse of existing components will enable developers to spend more time creating new and innovative capabilities. "CSA will free people up from developing something that has already been done elsewhere in the company; time that can be put to much better use."

The FRONT ARENA project involves an enhancement to its trade confirmation processing, delivered by reusing a document handler module developed by Adaptiv, an enterprise wide credit and market risk management solution. The project will be developed to CSA Level One standards.

Peter Banham, global head, product and marketing at FRONT ARENA, says they have been working on strengthening the back-office element of the front- and middle-office multiple asset-class system. "Originally we were looking to develop confirmation capabilities within our core code. However we discovered that Adaptiv's documentation module, which was developed specifically so it could be used outside of that solution, was available. We soon found reusing the module would help us to shorten development time."

Lillienberg says FRONT ARENA has saved close to a man year in development time by using the Adaptiv document handler. Adds Banham: "CSA has opened up new communication channels within the company and transformed the way we think about developing FRONT ARENA from an operations and STP point of view. For example, we are looking at the reconciliation and exception processing software of SunGard STeP to develop confirmation matching right down the pipe."

The improved integration between SunGard products that CSA can deliver will help make a significant difference to customers, says Banham. "In the past, there was perhaps not enough difference between integrating SunGard and other vendor products, compared with integrating between SunGard products. Soon a customer buying multiple SunGard products will achieve much closer integration and can leverage the benefit of a single vendor supplier."

Michael Oakman, senior vice-president of financial services at SunGard's EXP business unit, is heading up the adaptation work on EXP Financial (formerly PowerImage). The enterprise workflow management system captures customer information as it enters the workplace and subsequently automates the workflow. It offers advanced scanning, document capture, storage and electronic forms handling capabilities. EXP Financial puts thousands of documents at the fingertips of users for immediate access from anywhere on a network or via the internet.

EXP Financial has been chosen as one of the first solutions from the Benefit Administration & Insurance group to take part in the CSA initiative. Oakman says it is well suited to this because the solution provides technical interfaces that facilitate direct system-to-system integration. EXP Financial is also 100% J2EE certified and Web Services compliant.

"Because EXP Financial is Java-based, it made good sense to start here as most of our other anchor products are big host systems that are either mainframe or Cobol-based," says Oakman. "We also looked at our product range to determine which one would benefit the industry most as a CSA-compliant product. EXP Financial is a horizontal solution that is already integrated with many other SunGard products at the client-server level."

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Oakman intends to take EXP Financial all the way up to Level Four, or Native, CSA compliance. As the highest level of CSA adoption, it provides a complete reference implementation of a services oriented architecture to help make collaboration as efficient as possible and to simplify the runtime environment.

"Getting to CSA Level One compliance was easy. On Level Two, we are leveraging the visual common interface and sharing some of the plumbing of CSA. We expect to be Level Four by mid 2006," says Oakman.

One of the aims of Level Four compliance is to enable cross-selling and make product bundling more efficient, requiring less development effort. "Being at Level Four will give a great opportunity for other SunGard business units to leverage the capabilities of EXP Financial and also for us to increase our sales channel. It will have a very positive impact," says Oakman.

The impact on development also will be significant. Oakman estimates that CSA has the potential to reduce integration efforts by 90%. "We spend around 1,000 man hours now on a typical integration project. With CSA, we won't have to rewrite every single new integration and with 60 business units within SunGard that can be a monumental task. With CSA we should be able to integrate with any other SunGard product within 100-120 man hours, or we will take a six month effort down to one month," he says.



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MICHAEL OAKMAN

EXP



Another huge advantage of CSA, says Oakman, will be evident in security for Web Services. "We are working with customers and many other SunGard business units on a security model that will deliver single sign-on and entitlements. At Level Four, this will enable any SunGard business unit to leverage the CSA security and entitlement components to bring single sign-on to their customers where they have multiple SunGard applications. This is really exciting because it will allow us to tie in legacy and other SunGard applications under a single sign-on. The application will know what users are entitled to and their functionality limits. This will make a big difference in the security space."

Erickson at Wealth Management & Brokerage says CSA has brought additional rigor to development, particularly in the design phase. "We have a 40 page requirements document; typically we did not go to such extremes. Doing more design and documentation up front leads to a cleaner application and less work in the middle of the process. We will have high quality, easily integrated products, which makes all the sense in the world."

SunGard Common Services Architecture (CSA)

CSA represents a new paradigm for collaborative software development within SunGard. CSA is two things. First, it's a collaborative development process—a way of creating software that allows SunGard product development teams around the world to share, contribute to, and leverage, each other's work. Second, it's a technology framework—a vendor-agnostic service oriented architecture (SOA), based on mainstream open standards, that enables discrete components from SunGard's product portfolio to be plugged together to form configurable, composite applications. Simply put, CSA is a 'smarter way to develop smarter applications.'

There are four levels through which SunGard applications can conform to the CSA framework:



Autonomous Common Services: CSA Level 1 refers to legacy components that can be wrapped as a Web Service (where a Service Oriented Architecture already exists) and reused globally and deployed in a variety of environments.



Collaborative Common Services: CSA Level 2 provides structural standards for common services and calls for the presentation layer to be standardized according to the CSA user interface specification to help ensure a consistent look and feel for applications. Level 2 also calls for adoption of the CSA Admin Common Service for user management and entitlement.



Common Data Model: CSA Level 3 focuses on the underlying data structure, which is normalized and defined using CSA's database-agnostic XML schema definition. The common data model facilitates vendor neutrality and helps provide easy access to other CSA services.



Native: The highest level of CSA adoption provides a complete reference implementation of a Service Oriented Architecture to help make collaboration as efficient as possible and simplify the runtime environment. The native level also makes product integration much more seamless, i.e. requiring much less development effort.