



SUNGARD

**COMMON SERVICES
ARCHITECTURE**

A Smarter Way to
Develop Smarter
Solutions

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A GARTNER REPORT ENTITLED *SERVICE-ORIENTED ARCHITECTURE TAKES HOLD IN THE INVESTMENT SERVICES INDUSTRY* STATES 'WHAT DISTINGUISHES FIRMS ADOPTING SOA IS THEIR FOCUS ON THE RAPID DELIVERY OF NEW PRODUCTS AND SERVICES AND — TO A FAR LESSER EXTENT — THEIR DESIRE TO EMPOWER BUSINESS UNITS. THESE GOALS ARE CRITICAL FOR SUCCESS IN A DYNAMICALLY CHANGING MARKETPLACE IN WHICH THE ABILITY TO SEIZE FLEETING BUSINESS OPPORTUNITIES BY RAPIDLY ENTERING, MODIFYING AND EXITING BUSINESSES AND BUSINESS RELATIONSHIPS PROVIDES COMPETITIVE ADVANTAGE.'

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Gartner, Inc.
"Service-Oriented Architecture Takes Hold in the Investment Services Industry"
Mary Knox, 3 January, 2006

SunGard's Common Services Architecture (CSA) is a critical initiative enhancing our ability to serve our customers.

In its broadest sense, CSA allows SunGard's geographically dispersed software development teams to collaborate, leverage and reuse each other's work. Employing the techniques of agile development, CSA allows us to plug components from one SunGard system into another – resulting in improved software quality.

CSA is two things. First, it is a technology framework – a vendor-agnostic service-oriented architecture (SOA), based on mainstream open standards, that enable discrete components from SunGard's product portfolio to be plugged together to form configurable, composite applications. Second, CSA is a process for collaboration that seeks to leverage SunGard's resources in an open, flexible way making it easier to reuse software components and helping customers meet their specific needs.



A SMARTER WAY

CSA is a smarter way to develop applications. It addresses customers' needs for more efficient, economical and faster ways to make SunGard systems work together.

With CSA, much of what is considered to be standard "plumbing" for many applications, e.g. entitlements, user hierarchy, login, etc., has been normalized into a data model that is shared by all CSA applications. This helps facilitate seamless communication and interoperability between CSA's modular components, eliminate redundancy that currently exists across SunGard's disparate applications and improve the quality of our software applications.

ADDITIONAL CUSTOMER BENEFITS OF CSA INCLUDE:

- **HIGHER QUALITY SOFTWARE**
By enabling reuse of existing, best-of-breed components, development teams benefit from the rigorous testing and code review conducted by other development teams. This leads to more efficient, more effective and more quickly deployed software for our customers.
- **FASTER TIME TO MARKET**
CSA's guiding principles of collaboration and reuse of components by development teams speeds up the software development cycle. The faster we can get new systems or enhancements to our existing systems, the better we are able to use those systems to meet ever-changing business requirements.
- **OPENNESS**
CSA allows for the update and integration of solutions not only across SunGard products but also between SunGard and other vendors' solutions. Applications built on CSA can be quickly integrated with customer portals and third-party applications, including competitor products, by establishing a service-oriented architecture (SOA) and facilitating connectivity via industry standard Web Services.
- **FLEXIBILITY**
CSA solutions are vendor agnostic – meaning they are compatible with any major operating system as well as any database management system, Web server, integration platform, messaging service and programming language. This offers customers a significant amount of flexibility.
- **RAPID RESPONSE TO BUSINESS CHALLENGES**
Enabling customers to tap the models, analytics and business processes built into our existing solutions helps them to quickly adapt to changing industry requirements and creates innovative new applications for our software.
- **LOWER COST OF OWNERSHIP**
The business value of the CSA approach can be seen in the ease of integration and upgrade, reduction in architectural complexity, platform independence and ability to open new ways to matching evolving business priorities.

A NEW WAY OF WORKING

SunGard is committed to continual adoption of CSA throughout the company. CSA has developed standards that define how each SunGard component behaves and is either consumed or served up in a composite application. CSA Reference Implementation - the tangible infrastructure embodying the adopted SunGard CSA standards - is based upon popular design patterns (such as MVC), an enterprise service bus and distributed messaging (JMS, MQ and Web Services), a data access layer (DAO), agnostic interfaces (XML) and native enterprise code disciplines (J2EE and .NET).

There are four distinct levels of adoption that define how the common infrastructure works and how the application components interact. They are:



CSA Level 1

Autonomous Common Services 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.



CSA Level 2

Collaborative Common Services provides structural standards for common services and calls for the presentation layer to be standardized according to the CSA user interface specification to ensure a consistent look and feel for applications.



CSA Level 3

Common Data Model 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 provides easy access to other CSA services.



CSA Level 4

Native, the highest level of CSA adoption, provides a complete reference implementation of the Service Oriented Architecture to make collaboration as efficient as possible and simplify the runtime environment.

EMPLOYING
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A BLUEPRINT FOR SUCCESS

CSA has been in development at SunGard since 2002 and its tangible infrastructure has been used to deploy applications such as WealthStation, a workstation for financial advisors serving high-net worth individuals, and referencePoint, an enterprise solution for managing reference and market data. CSA applications can either be hosted, i.e., Reference Managed Data Service (a hosted service of referencePoint) or customer installed, i.e., referencePoint and WealthStation.

CSA is a reality – standards have been defined, methodologies have been established and an infrastructure is in place. CSA is the first time in SunGard's history that we have developed a combined technology roadmap. However, CSA also preserves our business unit organization structure, which fosters entrepreneurship, accountability and closeness to the customer - an important part of SunGard's culture and value system.

CSA is optimized for the business processes in financial services and includes a normalized data abstraction layer that gives database and platform independence. It enables installed legacy applications to easily leverage the breadth and depth of SunGard's products via Web Services, allowing them to share in SunGard's ongoing development efforts. With a clear integration path, customers running legacy applications can be assured that their investment in older SunGard technology will not be rendered obsolete.

CSA—comprising both the collaborative development process and the technology framework—is being rolled out across the whole of SunGard's financial systems business, and we have created centers of excellence in our off-shore and on-shore consulting services teams. There are more than 700 developers, architects and product managers who are CSA-certified. A central CSA support team has been established to help facilitate and coordinate inter-unit collaboration, provide education and referrals, as well as monitor development efforts to identify and correct any redundancies that may appear. It is transforming the process by which SunGard develops software, multiplying the opportunities for our systems to work together and helping to bring significant new value to our customers.

In 2006, we will establish a Customer Advisory Board with the objective of exploring how to extend the CSA technology and collaborative development process to customers. We will also establish a hosted environment to service the collaborative development of CSA-based components by the development teams of SunGard, our customers and partners, as well as a hosted environment to orchestrate and deploy CSA-based composite applications.

For more information on SunGard's Common Services Architecture, read Gartner's "SunGard Introduces A Common Services Architecture," Mary Knox, 7 December 2005.



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