



INTELLIGENT COMMUNICATIONS

Learn the Facts About IP Telephony

Avaya Service Oriented Architecture (SOA)

The primary need in many organizations adopting SOAs is to increase the agility of enterprise operations and IT to respond to changing market and business needs. The more agile, responsive, and dynamic the shifts in customer preferences and markets, the more severe the situation becomes for businesses who lack the ability to quickly manage change in their operations and business practices.

The challenge of creating new velocity-enabled applications that help enterprises to increase their speed of decision making and execution have led a growing number of IT architects to adopt new applications software manufacturing techniques. The greater the organization's ability to rapidly create, configure, and rearrange processes and services as required by the business, the faster the time to market for new or changed business initiatives.

SOA Creates Modules of Services

Service-Oriented Architecture (SOA) is an approach to enterprise architecture that abstracts IT functionality into business-oriented services. The application of SOA to IT governance promises to provide the visibility and control necessary for IT governance, while increasing the business agility today's organizations require. For enterprises to progress toward SOA governance, a shift not only in technology but thinking and behavior is required.

- Nick Lippis, Lippis Consulting.

Service Oriented Architecture, or SOA, is a methodology that focuses on three major objectives:

- Designing IT infrastructures that allow different applications to interoperate and exchange data via a common communications protocol
- Leveraging existing applications by exposing their capabilities as services that can be easily used by other applications
- Using these services to automate business operations

One key concept behind SOA is the definition of services. A service breaks down the capabilities within enterprise applications into modular, self-contained components that can communicate with each other and with business applications through a well-defined interface. Essentially, a common set of communication protocols connect all applications and services within the enterprise, regardless of their underlying hardware, operating system, or programming language.

One common way of achieving this is with Web services, which have become ubiquitous through near-universal support across a number of platforms and programming languages. Web services are a new breed of web applications, based on XML, that define how services can make themselves available on the network, how they can be located by other services or applications, and how they can be used (invoked).

With Web Services, enterprises can focus on developing a reusable library of service components and a deployment infrastructure on which new applications can be built quickly and easily using these services as building blocks, without the need to write new applications from scratch.



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Another key concept behind SOAs is the business process. Ultimately, an SOA frees the capabilities of applications from their underlying infrastructure through the definition of self-contained, modular services. However, without a business context these services are just that—services in isolation. In order for an SOA to be useful, there needs to be a business process management mechanism in place to enable these service components to be linked together within a process flow that ultimately defines a business service that can be easily modified and changed dynamically to meet changing business conditions.

The Great Promise of SOA (Avaya Communication Services)

"Communications, IT technologies and enterprise applications have developed as monolithic silos. SOA offers the opportunity to break up those silos," says Andreas M. Antonopoulos, senior vice president & founding partner at Nemertes Research. "SOA also gives you the opportunity to embed multi-modal communications—voice, email, IM—directly into business processes without having to re-implement them for each task."

The application of SOA offers great promise for addressing some key challenges that have been plaguing major software implementation projects like supply chain management and customer relationship management. While SOA utilization offers a major step forward in application and process development, many current implementations lack a major ingredient. That ingredient is the human communication mechanisms. At the core of any business process is the execution of steps that take data from multiple sources and integrates this into information that can be used to make a meaningful decision within the context of a business process, and then to take action based on this information. To do this, we must connect people with the process, and the process with the data.

Few enterprises today fully understand the business context in which their communications occur, yet real-time communications are the key to the normal operation of many business processes, and become critical when exception or crisis events require rapid response and quick decision-making. It is often during these situations that human interactions and communication are subject to the greatest level of latency and delay.

Avaya Communications Services are the essential building blocks for unleashing the power of communications to enterprise wide applications. These advanced communication capabilities are abstracted from the underlying Avaya MultiVantage resources and exposed as self-contained, self-describing web services, "Com-Services." They can then be addressed and accessed as discrete communication services that can be requested not only by MultiVantage applications but by a large assortment of business applications to achieve communication-enabled results. These services can also be combined and orchestrated to create new composite services. These "Com-Services" can be integrated within a portal, within a business workflow, and within a business application.

The Avaya adoption of the Service-Oriented Architecture methodology for defining and accessing base communications services enables its communications capabilities to be utilized by other enterprise applications following the SOA methodology. Communications services which have historically been isolated within Avaya traditional communications applications, are now being uncovered to extend their usefulness. Within SOA methodology, these services are now discoverable, provide coarse-grained business-level interfaces that have a network address, as they are now part of an integrated IP-IT convergence solution, can be remotely executable from a network client, and are loosely coupled with their original service context for use.

Benefits of Communications Enabled Business Processes

SOA delivers a number of important business benefits, including faster time to market, lower costs, better consistency and increased agility...Organizations view SOA as a means to reduce duplicate efforts and to extract more value from their existing IT investments. Burton Group, Application Platform Strategies Reference Architecture Technical Position: "Service-Oriented Architecture (SOA) Infrastructure," January 2006.



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As new demands arise from shifts in customer expectations, increased globalization or changes in competitive environments, limitations of existing technology and organization infrastructures can inhibit business responsiveness and profitability. SOAs help businesses realize benefits from simplification of technology, process, and functional complexity development to increasing flexibility and reusability of business staff and infrastructure.

Communications enabled services take this a step further by extending and simplifying configuration of voice and communications within enterprise processes to increase business velocity in response to market events, customer requests and competitive challenges. Enterprise processes can be communications-enabled with a portfolio of telephony, messaging, speech, access and contact center solutions, as well as communications services.

The potential benefits that can be realized are many:

- Cost savings – streamlines processes, reduces project costs, future proofs software investments, etc.
- More efficient development - higher degrees of modularity help decouple service development process
- Reuse – software components no longer confined to role for which they were originally created
- Evolutionary – SOAs enable efficient decomposition of functionality allowing businesses to take a step-by-step approach to adoption
- Risk mitigation – leverages involvement of business departments, facilitates integration of existing and new functionality, and even a failed project can contribute meaningful functionality for reuse by other services
- Technology independence – reduces skills requirements and helps elevate focus on which services to offer versus complexities of technical implementation

The functional environment of the communications-enabled business model reflects the Avaya intent to extend the range of software services that can make processes more efficient, more able to call for human decision, and most directly reach intended conclusions. Avaya offers both communication applications that can be integrated into an enterprise environment and also offers communications services that can be embedded into complex business applications, process flows and portals to achieve unique enterprise needs.

The Avaya approach integrates with IT best practices in terms of service orchestration, shares common elements such as management and security capabilities with enterprise IT solutions and provides reliable, secure, distributable, high performance for real-time communications in concert with business. By actively participating in IT standards committees Avaya is infusing real-time communications into IT best practices.

The Avaya model is evolutionary in its ability to accommodate existing infrastructures and investments while extending them to combine communications and data functions and to take advantage of every form of communications resource from access to infrastructure.

SOA and Intelligent Communications

Avaya sees the evolution of IT infrastructures in three phases. In the first or traditional phase, enterprises have separate infrastructures for voice and data networks. Time division multiplexing (TDM) is used for voice and IP for data. In the second or converged networks phase, enterprises build out their IP networks to leverage a common infrastructure for both voice and data. This enhances the IP network to meet enterprise-class criteria: improving quality of service (QoS) and increasing the reliability of real-time, mission-critical business and communication applications.



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The 2nd phase of IP Telephony has been characterized by its essential economic replacement dominance. By taking advantage of new less expensive network services, IP Telephony is becoming the obvious choice in the natural replacement cycle for telephony systems. With expected savings ranging from 15% to 50%, IP Telephony systems deployment have now passed time division multiplexing (TDM) in terms of current deployment.

Avaya Intelligent Communications represent the 3rd evolution of converged communications. The third phase of communications is based upon a value proposition of strategic value versus economic efficiency. At the heart of the strategic value proposition is the promise that communications capabilities when closely linked into business processes and applications can accelerate the velocity of enterprises to respond to changes in customers, and markets situations.

The basis for creating this tight linkage of business applications and communications capabilities resides in two emerging technologies: Web Services in a Services Oriented Architecture (SOA) and Session Initiated Protocol (SIP). Web Services in an SOA construct provides the ability to create new business application integration that incorporates communications services. SOA is aimed at building high level interfaces between applications that allow them to share information and process flows. SOA promises to achieve higher levels of application interoperability which can result in better application integration with business process, faster deployment of new capabilities, and increased flexibility for application and business process modification.

SIP is a new communications protocol that co-exists within an IP environment. The internet-centric design of SIP allows it to integrate easily with the web service environments being developed for many business critical applications. For enterprises, this means the introduction of powerful multi-modal communications, embedded as a service within their business applications. It also means that information on user presence can be incorporated into application business logic. Communications now becomes a tool not just for users, but also for the enterprise's critical business applications.

Avaya Intelligent Communications combines SOA and SIP, along with business-intelligent technologies that integrate business-context knowledge and user communication context knowledge. The end vision is a comprehensive multi-channel communication access architecture that helps increase business agility through rapid, intelligent responses to business events that finds and connects the right people, at the right time, with the right devices. This Intelligent Communications integration will enable businesses to keep their decision-making processes moving towards resolution, whether for application-to-application tasks, human-to-application, or application-to-human communications related tasks.

Avaya Global Services

Achieving faster customer responses and improving operations requires the ability to design, orchestrate, and support solutions that merge communications into business processes.

As companies move to Web services for communications applications, professional services will play an increasingly important role in creating applications in an open, standards-based SOA environment. Avaya Global Services provides expertise, experience, and methodologies to take businesses to Intelligent Communications. Professional Services from Avaya are focused on helping IT and business managers identify business processes that can be communication enabled. We help businesses develop technology and IT architecture roadmaps to support the transformation of applications while mitigating risks, leveraging existing investments, and maximizing potential benefits.

Avaya conducts workshops in Intelligent Communications and Communications Architecture, and identifies and provides assessments of potential business processes that are strong candidates for benefiting from the Avaya Communications Architecture. We also create high-level specifications and service orchestration blueprints.



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Professional Services from Avaya support enterprises in the planning, design, development, and integration of custom software applications to migrate traditional enterprise communications and contact center solutions to powerful, SOA-based applications. Examples of such applications include contact center reports and Web-based reporting systems, IP agent greeting administration, and voice portal adaptors. Complex CTI applications can include business-driven intelligent routing and self-serve speech-enabled applications. IP Telephony phone applications can include Webcam, hospitality, and news feeds.

Avaya provides a full range of lifecycle support (from planning to full implementation to ongoing maintenance and management) for integrated communications and the entire communications architecture. Avaya software-based remote monitoring and management capabilities provide enterprises highly reliable and available applications and protect critical network infrastructure that includes existing telephony and contact center communications as well as new communication-enabled applications.

Avaya is creating common software maintenance services and tools to deliver support across all layers of the Avaya Communication Architecture. Our Enterprise Services Platform, part of our managed services solutions, provides manageability, serviceability, security, and reliability throughout the complex communications infrastructures that are being developed in the move to Intelligent Communications.

What is Possible with Communications-Enabled Business Services

Impelled by a focus on aligning technological and business needs, the most-likely starting points for the adoption of SOA will involve integration and deployment projects, in particular, well focused departmental or business-unit-level application projects, which include such business specific requirements as self-service portals, call center integration and "light" forms of business to-business (B2B).

Michael Barnes, Paolo Malinverno, Gartner, "Learn the Key Success Factors for SOA Deployments", Oct. 11, 05

Implementing a multi-modal healthcare appointment service - The business service workflow integrates the medical patient and appointment business applications, and provides multi-channel access through self-service voice or web portal communication services. Patients can view and set-up appointments either over the web or by calling the office and accessing the voice portal service. During appointment confirmation, patients are given the option to be added to a waiting list in case earlier dates become available. If another client cancels their appointment, the event processor triggers a new process workflow through the service orchestrator that initiates a call out to a client on the wait list and offers them the choice of taking the now open appointment. If the client accepts, the revised appointment data is updated in the system and available if the patient subsequently calls in or uses the web portal to check their status.

Defining a new level of service in air travel - A passenger is on board a scheduled flight awaiting departure when maintenance problems cause cancellation of the flight. The cancellation automatically alerts the reservation system, which then matches all affected passengers to alternative flights, tapping knowledge of both passenger preferences and booking histories. High priority messages, presence awareness and speech are employed so the passenger gets a call of a rebooking commitment the moment they walk off the plane.

Additional information on what is possible with Avaya Intelligent Communications is available in the Avaya Communication Architecture whitepaper.

About Avaya

Avaya is a global leader in enterprise communications systems. The company provides unified communications, contact centers, and related services directly and through its channel partners to leading businesses and organizations around



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the world. Enterprises of all sizes depend on Avaya for state-of-the-art communications that improve efficiency, collaboration, customer service and competitiveness. For more information please visit www.avaya.com/uk.