Service Oriented Architecture (SOA) Development, is an architectural approach where application components use a collection of services that are available in a network to communicate with each other. SOA allows services to communicate either to pass data or to coordinate a movement. It is a distributed systems architecture approach that uses loosely coupled assistance, standardized interfaces, and protocols to deliver seamless cross-platform integration.

Service Oriented Application (SOA) Development: How to be Know

SOA allows for the integration of widely disparate components by providing a common interface and set of protocols for these components to communicate via what is known as a service bus. In business terms, SOA is an IT architecture service that supports the integration of your business as linked and repeatable business tasks or services. Also, The structural design of SOA ensures there is an alignment between the business requirements and the technological solution.

Service-oriented architecture, or SOA, is a phase in the development or integration of applications. Also, It defines a method for making software components reusable through the use of interfaces.

In its most basic form, SOA allows applications to take advantage of services available on the network. These services are provided through network calls over the Internet. Using common communication standards, SOA facilitates the rapid and efficient integration of services in applications.

Each service in SOA represents a complete business function. Their services publish in a way that makes it easy for creators to build their applications using those services.

Unlike microservice architecture, SOA allows users to integrate a large number of services from existing services to create applications.

They encompass a collection of design principles that organize system development and supply the means for the integration of components into a cohesive and decentralized system

SOA-based computing packages function as a collection of interoperable assistance that can integrate into various **software systems** belonging to different company domains.

Roles of Service-Oriented Architecture (SOA)

Service Oriented Architecture make up of three main roles: Service Provider, Service Broker, Service Registry, and Service Requester/Consumer. The Service Provider is responsible for managing the service and working with the registry to decide what services to offer, like security, access, pricing, etc. They also decide which services to offer and if any trading agreements need to make.

The Service Broker is responsible for providing information about the service to those who request it, and the scope of the Broker determine by who implements it. The Service Consumer is responsible for finding entries in the Broker Registry and then connecting them to the Service Provider. They can access multiple services, but it depends on their ability to do so.

Components of Service-Oriented Architecture (SOA)

The components of an SOA are as follows:

- The Application Frontend: Provides value to end-users by initiating and controlling all activity in the enterprise system
- The Service: Provides a high-level software concept for the service
- The Contract: Specifies the purpose, function, limitations, and usage of the services
- The Interface: Provides the functionality of the service to end-users
- The Service Implementation: Provides the necessary business logic and relevant data
- The Business Logic: Business process represented by a service
- The Data: Data represented by the data in the service
- Service Repository: Represents the services and allows for the discovery of the service's operation access right, owner, quality, etc
- Service Bus: Flexible infrastructure for the integration of applications and services

The Service Bus Routing message, The Transfer Protocol between Requestor and Service

The Handling of Business Events, The Management of QoS, Security, and Interactions between Services

Why is Service-Oriented Architecture (SOA) important and what benefits?

Service-oriented architecture (SOA) has many benefits, especially for web service-based businesses. *Here are a few of the main benefits of SOA.*

- **Language-neutral integration:** No matter what language is being designed, the system offers and invokes benefits through a shared tool.
- **Part reuse:** Once an organization builds an application component, it can offer it as a service to the rest of its organization.

- **Agility:** Agility is inherent in almost every aspect of an enterprise. Whether it's a simple algorithm, software component, solution, platform, or process, there's a certain degree of agility in how they are built, placed, and used.
- **Operating an existing system:** One of the main uses of SOA is to categorize elements or functions in current applications and open them up to the organization or business.

Advantages of Service-Oriented Architecture (SOA)

The main Advantages of SOA are as follows:

- **Reuse of services:** Applications created from existing services, so can reuse to create many applications.
- **Ease of maintenance:** Since services are independent of each other, they can easily update and modifies without impacting other services.
- **Autonomy of forum:** They allow for complex applications to assemble by combining services chosen from additional sources, independently of the forum.
- **Availability:** SOA facilities can easily access by anyone on request.
- **Reliability:** SOA apps are more reliable because they are easier to debug small services than large codes.
- **Scalability:** SOA services can run on multiple servers within the same environment, increasing scalability.

Disadvantages of Service-Oriented Architecture (SOA)

The main Disadvantages of SOA are as follows:

- High overhead: All inputs square measure their validity before sending them to the service
- Verification of input parameters: Every time services interact, it reduces performance as load and response times increase
- High expense: They require huge investments in technology, development, and humanitarian aid. The high initial investment in SOA
- High Service Management: Millions of messages interact in milliseconds, so SOA requires complex service management systems and high bandwidth servers

When services interact, they send messages to tasks, The number of messages can go into millions

Application of Service-Oriented Architecture (SOA)

Following are the service oriented application development and applications briefly mentioned below:

SOA is used by defense forces to provide situational awareness capabilities. For instance, the US Air Force Space Chief of Staff recently announced the launch of new space-based situational awareness capabilities.

Healthcare Delivery

The healthcare sector is in dire need of good information technology to stay up-to-date with the latest care and protocol developments.

Mobile App

In today's world, many mobile applications use built-in functions to run their games. For instance, an app may need GPS, so it will use the built-in GPS functions on the device.

Practical Application

SOA can use in many different ways around us, whether we know about it or not. Many military and air forces use SOA infrastructure to provide situational awareness capability.

Museums

SOA helps maintain museums by providing a virtualized pool of information and content.

Example of Service-Oriented Architecture (SOA)

Here are a few examples of service oriented application development in action:

- **First Citizens Bank:** Provides services not only to its customers but also to approximately 20 other institutions, such as check imaging and check processing; outsourced customer service; and "bank in a box" for providing community-sized banks with everything they need to operate.
- **Thomson Reuters:** Provides business intelligence information to businesses and professionals and maintains a stable of approximately 4,000 services which it makes available to third-party customers.
- **McDonald:** The only competitive advantage that large enterprises still have is SOA, according to the Chief Information Officers (CIOs) of Walmart, Best Buy, and McDonald's.
- **Indian Air Force Space:** Deploys the new space-based situational awareness systems on the SOA-based infrastructure.

Cloud Computing of Service-Oriented Architecture (SOA)

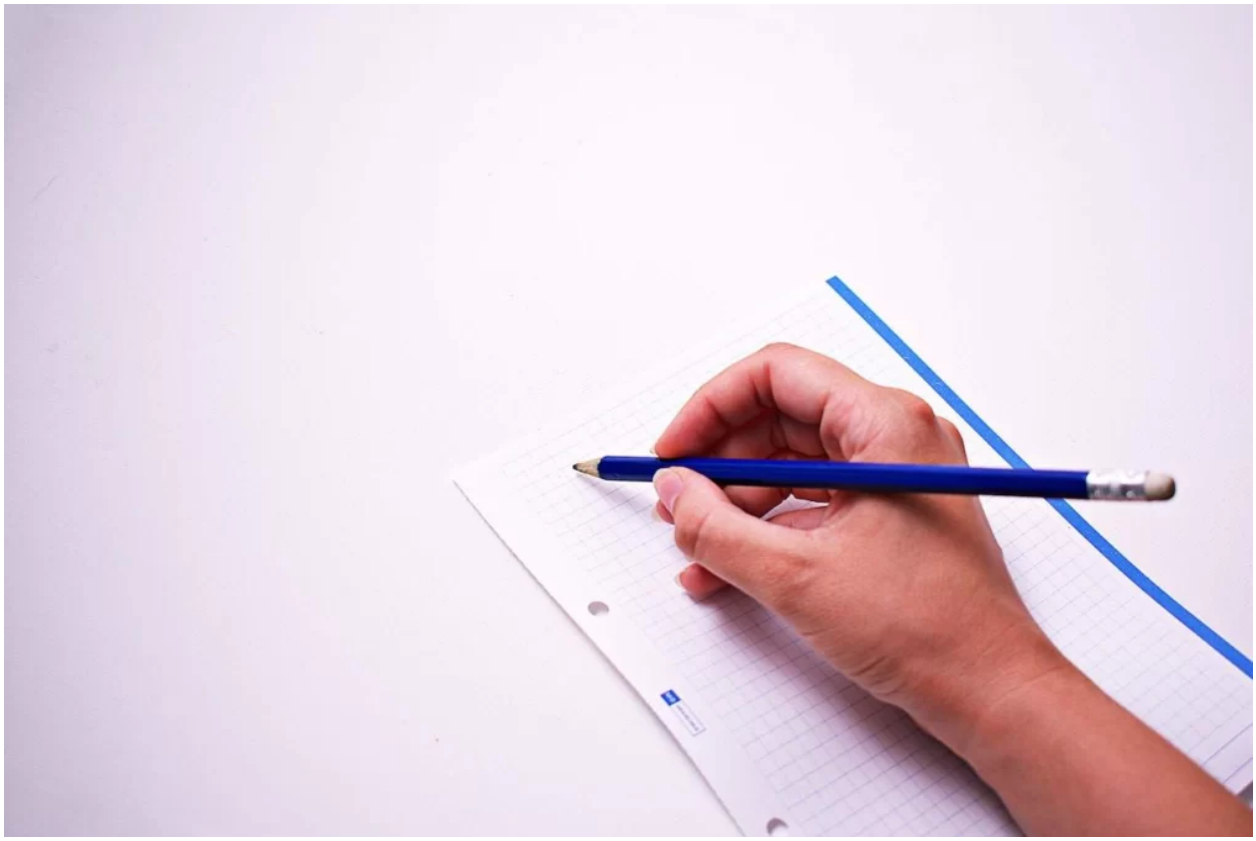
The following service oriented application development in Cloud Computing below are;

First, let's be clear that Service Oriented Architecture (Saa) can work in conjunction with or independently of cloud computing. More and more companies are moving their file **storage into the cloud**, so it makes more sense to use both cloud computing and Saa together.

In short, using SaaS in cloud computing means that users can quickly and easily implement services that tailor to their client's needs "without consulting an IT department".

One of the drawbacks of using Saa in the cloud is that some aspects of Saa do not evaluate. For example, security and availability are often left to the service provider's discretion.

One of the biggest challenges that businesses face when utilizing SOA in the cloud is the integration of legacy data and systems. It is also important to remember that not every aspect of IT can outsource to the cloud and that there are still some things that must do manually.



Service Oriented Application (SOA) Development: How to be Know; Photo by Dids.