Service Oriented Architecture (SOA)

What is SOA?

Service Oriented Architecture (SOA) is defined as an architecture for developing, deploying and managing semantically enriched, loosely coupled, platform-independent, work units composed as ‘Services’ among Providers and Consumers to support business functions [1].

SOA is considered the fourth wave of distributed computing approach, which began with the centralized computing paradigm in the 1960s and 1970s, then moved through the PC and client-server era to the rise of the Internet and the web. The openness created by the web increases the need for integration and enables the foundation of SOA that allows the creation of Service-centric systems. Such systems integrate services from different providers regardless of the underlying operating systems or programming languages of those applications.

SOA Principles

SOA advocates seven main principles:

1. **Formal service contract**: service contracts establish the terms of engagement to which consumers and providers of a service need to comply.

2. **Functionality and technology abstraction**: SOA encourages the development of services as black boxes; hiding their underlying details from consumers.

3. **Loose-coupling concept**: SOA minimizes the dependencies among the different services to support better modularity.

4. **Service autonomy**: services must have a significant degree of control over their underlying resources in order to provide reliable and predictable performance.

5. **Reusability and service composition**: SOA achieves new business requirements by building less and using more of what we already have.

6. **Service statelessness**: services should minimize the amount of state information they maintain.

7. **Service discoverability**: SOA helps to avoid creation of redundant services or services that implement redundant logic.

SOA in SECC

According to News Research Report at ReportsnReports.com, Services Oriented Architecture (SOA) markets are anticipated to reach $15.1 billion in 2019 that is considered a significant growth. In 2010, research had SOA markets at $4.0 billion; by 2012 the market reached $7.1 billion. Growth has been achieved organically because more frameworks are needed to build cloud computing and more infrastructure is needed in the data center to interconnect applications using SOA middleware. Even though, SOA technologies have been largely embraced for use in large enterprises to deal with their complex services and business processes; however, Small and Medium Enterprises (SMEs) can also benefit from SOA to start, support, and grow their businesses.

Software Engineering Competence Center (SECC) focuses on supporting the establishment and deployment of SOA architecture for the SMEs in Egypt. SMEs can benefit from SOA to start, support, and grow their businesses.

**SOA Adoption**

SOA is not a silver bullet for software success. So, when not to adopt SOA?

- When the organisation does not change their business needs continuously and frequently.
- When the organisation is not technically mature enough to deploy SOA.
- When the existing architectures are not homogeneous and do not require integration.
- When the business value of change is low.

Gartner 2009 shows the wide range of competing technologies and complementary technologies at different stages of maturity that can promote the application integration and platform middleware. This hype cycle defines a time scale of 2 to 5 years for SOA to achieve sufficient technical maturity to become actively and widely adopted by mainstream users.

For more information, please visit [http://www.secc.org.eg/RECOCAPE/](http://www.secc.org.eg/RECOCAPE/).