Service Oriented Architecture (SOA):
SOA Defined

Steven Bucksbaum, February 20, 2011

1. Service Oriented Architecture (SOA) defined
    a. SOA is a paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains.
    b. Service-Orientation introduces the concept of contracts, policies and interoperability.
2. Service is a logical term for SOA
    a. Service refers to the entry point or window through which business functionality can be reached.
    b. Service are chunks of business functionality exposed in some way that respect the tenets of SOA
    c. Each service represents code re-use on a business or enterprise level (single-source-of-failure).
3. Four tenets of SOA:
    a. Service boundaries are explicit
        i. Expose a specific set of business functionality
        ii. Use a well defined contract
        iii. Contract describes a set of concrete operations and messages supported by the service
        iv. Services completely encapsulate the coordination of calls to business components in response to operations it exposes to clients.
    b. Services are autonomous
        i. Service encapsulates business functionality and also encapsulate other dependencies of the business tier
        ii. Entire service is movable or replaceable without impact to other services or system functionality.
        iii. Atomicity dictates
            1. Service boundary must act as independent unit for versioning
            2. Service boundary identifies deployment boundary for callers.
            3. Service must operate in isolation be fault-tolerant. Exceptions in one service should not impact other services.
    c. Clients and services share contracts, not code
        i. Contract must not change once published
        ii. Contract should remain backward compatible to existing clients.
    d. Compatibility is based on a stable policy:
        i. Communication protocols
        ii. Security requirements
        iii. Reliability requirements.
4. System design
    a. Encapsulate functionality behind service boundaries to achieve re-use, maintainability, version control, visibility, orchestration
    b. Each service has sole ownership over its data tables
        i. Responsible for data CRUD – create, read, update and delete
    c. Services have to communicate with one another to access data, even for reporting.
5. Web Service is the physical implementation of the logical SOA Service.