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Office of Information Technology Services Standard	**No:** ITS-S20-001
ITS Standard: **Service Oriented Architecture**	**Updated:** 07/10/2020
	Issued By: NYS Office of Information Technology Services **Owner:** Chief Technology Office

1.0 Purpose and Benefits

The Office of Information Technology Services (ITS) hosts and maintains valuable intellectual property (IP) assets which include custom computer code, information assets, computing capacity, and licensed commercial-off-the-shelf (COTS) software. Maximizing the usage of these assets is a critical driver for both reducing costs and consolidating computing capacity as these assets can be reused by utilizing them as business-oriented interoperable services.[1]

This technology standard establishes the parameters for categorizing such services into a library to maximize efficiency in usage of IP assets. If applied correctly, Service Oriented Architecture (SOA) will reduce the overall costs of information technology (IT) and will enable business process automation.

2.0 Authority

Section 103(10) of the State Technology Law provides ITS with the authority to establish statewide technology policies, including technology and security standards. *Section 2 of Executive Order No. 117* provides the State Chief Information Officer with the authority to oversee, direct and coordinate the establishment of information technology policies, protocols and standards for State government, including hardware, software, security and business re-engineering. Details regarding this authority can be found in NYS ITS Policy, *NYS-P08-002 Authority to Establish State Enterprise Information Technology (IT) Policy, Standards and Guidelines*.

[1] Unless specifically mentioned, the term "service resource" within this document refers to any inter-system interface. These include Application Program Interface (API), Web Services and message queue exchanges.

3.0 Scope

This standard applies to ITS, all services developed by ITS, its contractors and subcontractors, and external vendors of ITS supported agencies.

For this standard, a service is a mechanism to enable access to one or more business capabilities, where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description.

4.0 Information Statement

4.1 Service Oriented Architecture Reference Architecture

This standard is based in part on the concepts documented in the Organization for the Advancement of Structured Information Standards (OASIS) *Reference Architecture Foundation for Service Oriented Architecture* (SOA-RAF) version 1. The usage of the SOA-RAF is a key enabler for the achievement of the value propositions of an SOA.

4.2 SOA Principles

The following principles apply to services developed by ITS:

- Services must be treated as externally exposed business capabilities, not one-off system integrations.
- Services must be built with the ”requirements-first”[2] methodology.
- Service must not expose the underlying architecture of the application/system for which the interface is written for.
- Services must be designed for reuse.
- Services must be treated as long-term products, not individual projects.
- Services must use standards that allow the most diverse consumer base possible.
- Avoid obscure, immature or proprietary protocols.

4.3 Service Owner Responsibilities

Every integration service requires a primary and a secondary owner. The integration service owner is a person who is accountable for the development and operation of the service. The integration service owner must be willing to develop and maintain the service. The integration service owner may delegate responsibilities of the service to other staff members and external organizational units. The integration service owner’s responsibilities include, but are not limited to:

- Authoring and maintaining the Service Description (See Section 4.5 Enterprise Service Repository and Intermediary)
- Operating at the:
  - Business level - managing requirements and change requests on the functional level, approving the intake of new consumers
  - Development level - technical questions, change requests, service design, development and maintenance

[2] Also known as “contract-first” methodology.

    - Operations level - questions regarding the best ways to link to a service, resolving service issues and decommissioning service
    - Security level
- Following the current technology patterns supported by ITS.
- Yearly planning and budgeting for operating the service.

Service ownership may transition between individuals when management determines a change is necessary, the integration service owner changes roles within the agency, or the integration service owner leaves the agency.

4.4 Service Interoperability

All service interfaces must comply with one of the following message patterns:

- Representational State Transfer (REST) API
- Simple Object Access Protocol (SOAP) Web Services
- Asynchronous Messaging using an ITS supported queuing or event-driven platform

REST is the preferred approach for service interfaces. SOAP Web Services are appropriate for legacy systems and technologies. For additional information on service interfaces, please contact the portfolio architect.

4.5 Enterprise Service Repository and Intermediary

All inter-application services must be managed by the currently supported ITS service gateway. This includes services hosted by external entities. All service descriptions must be hosted on the currently supported ITS service repository.

4.6 Service Descriptions

Every service must be documented by a Service Description; which will be stored in a central repository. The Service Description must be kept up to date by the integration service owner. The Service Description must contain the following information:

- Service Name
- Service Version
- Brief Description
- Overview
- Information Owner (Organization/Agency)
- Service Owner (Person and Organization/Agency)
- Support Group
- Service Usage[3]
- Quality of Service (QoS) Requirements:
    - Expected Uptime
    - Average response time
    - Service usage limits
    - Bandwidth restrictions

[3] Detailed instructions on how to use each operation of the service. This should include detailed information about the data being passed between the systems. The SOA-RAF refers to this meta-data as the service's "behavior model" and "information model".

- End of Life Date
- Business Capability Implemented[4]
- Where applicable, the Open API document or Web Service Definition Language (WSDL) file
- Sample code to demonstrate the service in standardized way of consumption.

It is the responsibility of all parties to mutually agree with the service description and document such agreement in writing to be approved by the respective party's executives. Such agreement may take the form of a Memorandum of Understanding (MOU) or Letter of Intent to be prepared, reviewed, and approved by the ITS Division of Legal Affairs.

5.0 Compliance

This policy shall take effect upon publication and compliance is required. ITS may amend its policies and standards at any time; compliance with amended policies and standards is required.

If compliance with this standard is not feasible or technically possible, or if deviation from this policy is necessary to support a business function, an exception may be requested through the Chief Technology Office's exception process.

6.0 Definitions of Key Terms

Except for terms defined in this policy, all terms shall have the meanings found in http://www.its.ny.gov/glossary.

Term	Definition
Service	A mechanism to enable access to one or more business capabilities, where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description.

[4] A Business Capability is the top-level object of the Technology Business Management (TBM) taxonomy.

7.0 Contact Information

Submit all inquiries and requests for future enhancements to the policy owner at:

Chief Technology Office
Reference: ITS-S20-001
NYS Office of Information Technology Services
State Capitol, ESP, P.O. Box 2062
Albany, NY 12220
Telephone: (518) 402-7000
Email: CTO@its.ny.gov

ITS policies, standards, and guidelines may be found on the Inside Edge at: https://nysemail.sharepoint.com/sites/myITS/InsideEdge/Pages/Policies.aspx

8.0 Revision History

This standard shall be reviewed at least once every year to ensure relevancy.

Date	Description of Change	Reviewer
07/10/2020	Issued standard	Chief Technology Office

9.0 Related Documents

New York State SAGE Commission. (2013). Spending and Government Efficiency Commission Final Report. Albany, NY.

Organization for the Advancement of Structured Information Standards. (2012, December 4). Reference Architecture Foundation for Service Oriented Architecture Version 1.0. Retrieved from OASIS: http://docs.oasis-open.org/soa-rm/soa-ra/v1.0/soa-ra.pdf