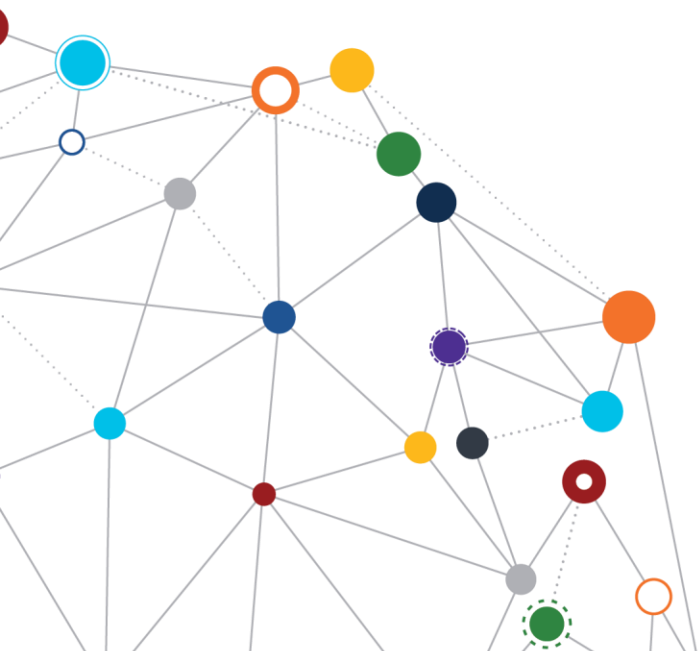OFFICE OF
INFORMATION
AND TECHNOLOGY

Application Programming Interface (API) Enterprise Design Pattern

API Documentation Standard

June 2018 | Demand Management Division

Table of Contents

Table 1: Change Matrix

Version	Date	Description of Updates
1.0	June 8, 2018	API EDP Segment 1 document approved for API Documentation Standard.

1 Context

Application programing interfaces (APIs) enable business agility across the Department of Veterans Affairs (VA). Maintaining a description of an API supports understanding of the API's business context for both the development community and non-technical users. API documentation contains important notes about the API that provides definitive guidance to developers to help them code.

2 Problem

Discrepancies in API documentation and management necessitates a standard for documenting APIs throughout VA. Specifically, API documentation criteria and standards must be developed, implemented, and deployed using common guidelines that are applied to all APIs exposed by VA and used by both API consumers and providers.

3 Approach

OpenAPI Specification (formerly Swagger) is the approved standard for documenting APIs within VA; details regarding this specification are in the Reference section. This approved standard is reflected in the One-VA Technical Reference Model (TRM) and in associated compliance criteria. Project teams follow these standards to ensure that they have satisfied the API documentation criteria.

Table 2 displays a set of attributes that would be applicable for OpenAPI specifications that are based on the Representational State Transfer (REST) architecture style.

- All new APIs will follow REST constraints; these constraints are reflected in the approved technical standards in the TRM.
- Any currently maintained RESTful APIs or new APIs should be documented using these attributes.
- Legacy (non-RESTful) APIs currently do not follow this format, but a plan of action must be created for migrating to the latest approved API standards, including the current approved documentation criteria.

Table 2: Minimum Attributes

Attribute	Description
API Name	A commonly agreed upon name for the API
Description	A clear explanation of what the method/resource does. A commonly agreed upon description of the API's purpose, functionality, value, and user community.
Version	Current API version
URL	API endpoint

Attribute	Description
URL Parameters	A list of parameters used on this resource/method, as well as their types, special formatting, rules, and if they are required
Method	GET POST DELETE PUT
Security	Authentication (Single Sign On Integration, or SSOi, Enabled, Token Based Authentication, OAuth), Message Transport
Access Type	Internal/External, Trusted/ Anonymous
Response Codes	HTTP Status and Error Codes
Samples/Examples	• A sample call with the correlating media type body • A sample response, including media type body • Code examples for multiple languages, including all necessary code Software development kit (SDK) examples (if SDKs are provided) showing how to access the resource/method, utilizing the SDK for the language
Points of Contact (PoC)	• Business PoC: The primary sponsor representative for the API that provides requirements and guidance on decisions that impact business functions that are supported by the API ▪ Technical PoC: Responsible for day-to-day management of the API and ensures that all technical system components (software, infrastructure, platforms, network, security) are operational and integrated to support successful API functionality

3.1 API Documentation Principles

- All VA API standards are informed by the API standards established by the General Services Administration's (GSA) 18F Group: https://github.com/18F/api-standards.
- All APIs will be documented using the approved interface definition language (IDL) and validated to ensure the specification is correct.
- API documentation will reflect pertinent GET POST DELETE PUT operations for the service that the API exposes; it will reflect customer-facing information about the service expressed in a Service-level Agreement (SLA).
- Projects responsible for developing an API should follow "contract-first" design practices, including the documentation of the API during initial development. It is only after iterating on the API definition that the service is implemented. Doing this design up front increases the chances of building a service that meets the needs of its clients.
- API documentation will include relevant metadata (per 18F API Standards)

o   Include enough metadata so that clients can calculate how much data there is, and how and whether to fetch the next set of results.

```
{
 "results": [ ... actual results ... ],
 "pagination": {
  "count": 2340,
  "page": 4,
  "per page": 20
 }
}
```

Figure 1: Example of Metadata

- Namespaces for the APIs refer to data elements described in the VA Enterprise Architecture (EA) Data and Information Domain, which represent business entities that align to the Business Reference Model (BRM), as available.
- JavaScript Object Notation (JSON) Schema - All databases and data that is used as part of API operations possess a JSON schema definition, that accompanies the OpenAPI, that defines access to an API. JSON Schema provides the ability to define references across and between individual schema.

4 Application

The One-VA TRM and Design, Engineering, and Architecture (DEA) user stories have a standard for OpenAPI. Any project team that will be going through the Veteran-focused Integration Process (VIP), or developing or retaining APIs, must comply with the approved standard in the One-VA TRM; and map to the below DEA user story. Future changes in the standard will be reflected in the One-VA TRM (for example, changing the OpenAPI version); and pertinent DEA user stories that are related to both consumption and provision of APIs.

Table 3: DEA User Stories

DEA User Story	Description	Notes
DEA 04.24.01 Service Design and Documentation	100% of APIs that meet the OpenAPI specification standard must be documented according to the API Enterprise Design Pattern (EDP) API Documentation Template and published in the VA Enterprise Repository (VEAR)	New DEA compliance user story acceptance criterion for API documentation will be included in June release

Future updates of this document will reflect updates to the DEA compliance criteria to reflect the guiding principles for API documentation, and relevant developer-level documentation will be included as links. Compliance with this standard for API documentation applies to the following major project scenarios:

- All new development efforts that will be leveraging the VA Enterprise Cloud (VAEC)
- All existing APIs that expose Authoritative Data Sources (ADS)
- All existing APIs that provide endpoints for approved Enterprise Shared Services (ESS)

Current APIs will be housed in the VEAR; in the near term they will be transitioned to VA.api.gov, which will be the required repository for API documentation. Future updates of this document will reflect the change and associated guidance for how to use VA.api.gov for documenting APIs.

5 Impacts

The following are potential impacts to product delivery if the API standards are not followed:

- Documentation will continue to be limited, resulting in non-discoverable APIs
- Newly created or currently maintained APIs will be non-compliant
- Loss of value of the use of APIs by project teams

Appendix: Resources and Relevant Capabilities/Limitations

References:

- OpenAPI specification: https://github.com/OAI/OpenAPI-Specification
- 18F GSA API Standards: https://github.com/18F/api-standards
- REST Cookbook: http://restcookbook.com/
- VA DEA Assessment Guidance: https://vaww.portal2.va.gov/sites/asd/AERB/DEA_Assessment/DEA%20User%20Story%20Alignment/Home.aspx
- VA Directive 6551: https://www.va.gov/vapubs/viewPublication.asp?Pub_ID=829&FType=2

Relevant Capabilities/Limitations

Current Capabilities:

Currently, the VA API landscape makes use of OpenAPI (formerly Swagger) and RAML (RESTful API Modeling Language), which was created by Mulesoft. However, it must be noted that as of April 2017, Mulesoft has adopted the OpenAPI standard. RAML is still currently prevalent in industry, but increasingly, many companies like Salesforce (which recently acquired Mulesoft) have embraced the OpenAPI standard.

Current Limitations:

The VA currently has no standard minimum criteria to document APIs in a registry. There has been no centralized location for APIs to be documented; this has resulted in project teams being unable to discover APIs. As a workaround, APIs will be housed in the VEAR; in the near term, APIs will be transitioned to VA.api.gov, the required repository for API documentation.