The smartAPI pilot: Making it easier to author and find FAIR Web APIs

Michel Dumontier[1], Amrapali Zaveri[1], Shima Dastgheib[1], Trish Whetzhel[2], Andrew Su[2], Chunlei Wu[2]

[1]Stanford Center for Biomedical Informatics Research, Stanford University, Stanford, USA
[2]The Scripps Research Institute, La Jolla, CA, USA

http://smart-api.org

Abstract

Biomedical data analysis is increasingly undertaken using cloud-based, web-friendly application programming interfaces (APIs). However, sifting through API repositories to find the right tools presents a number of formidable challenges: users must not only supply the right combination of search terms to find relevant APIs, but must also closely examine the API outputs to determine how they can be connected together. This task is made more difficult because the APIs generally lack the rich metadata needed to precisely describe the service and the data that it operates on. However, authoring good metadata is seen as tedious and unrewarding, unless they can be demonstrated as useful to users.

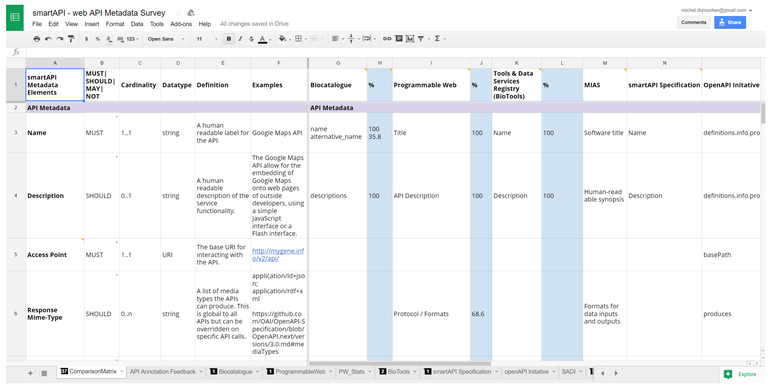
The aim of the **smartAPI interoperability pilot** was to explore the use of semantic technologies such as ontologies and Linked Data for the annotation, discovery, linking, and reuse of smart web APIs. Smart web APIs are easier to discover by enabling more search using their rich semantic metadata, and eliminate data silos by providing Linked Data. We developed the smartAPI metadata specification through a community-based effort that involved surveying and comparing API metadata from multiple repositories as well as multiple API metadata specifications. We extended the Swagger Editor to suggest fields from the smartAPI specification and values from the smartAPI repository and a novel tool to profile the output of an API. The **smartAPI repository** offers a **faceted search** user interface coupled with an API for storage, retrieval, field-specific suggestion, and global search over smartAPI descriptions. We are currently working in the context of the CFWG for API interoperability to annotate APIs and evaluate our tools in the context of utility and usability.

Availability

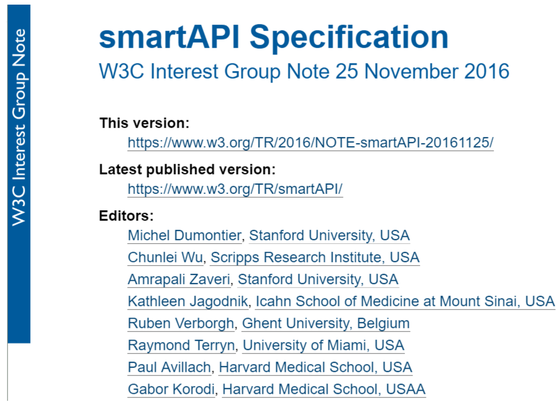
Website: http://smart-api.org

Webinar for Editor : https://goo.gl/jYcvtK

Findable Accessible Interoperable Reusable



API Metadata Survey. We performed a survey of 3 repositories (Biocatalogue, Programmable Web, Elixir Tools & Services Registry) and 4 specifications (MIAS, OPEN API, SADI, schema.org, and a preliminary smartAPI metadata specification).



API Metadata Specification extends OPEN API

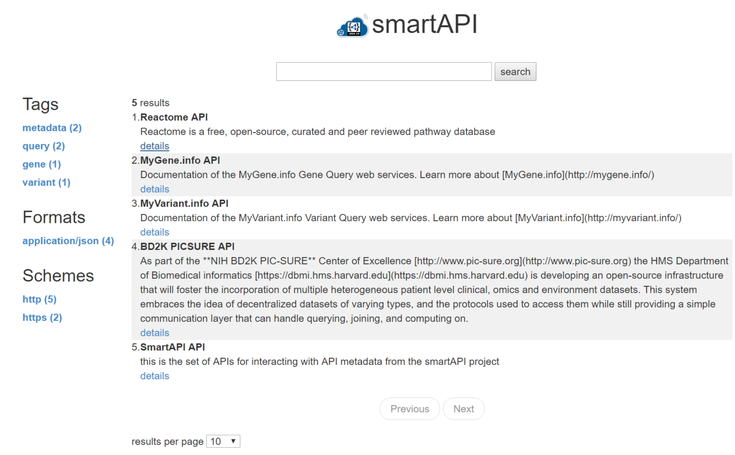
Metadata Elements

20 **basic**, 6 **provider**, 10 **operation**, 12 **parameters**, 6 **response**

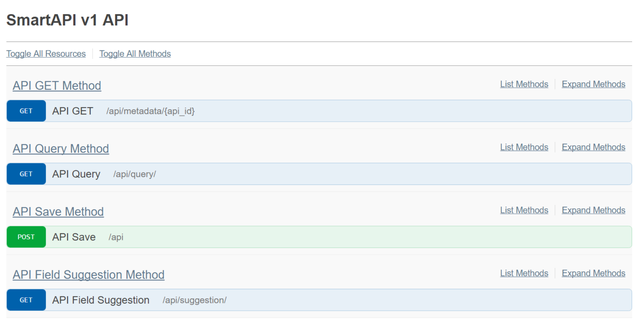
MUST
- Name
- Access Point

SHOULD
- Description
- Documentation
- Response MIME-Type
- Terms of Service
- Authentication Mode
- Version
- SSL Support

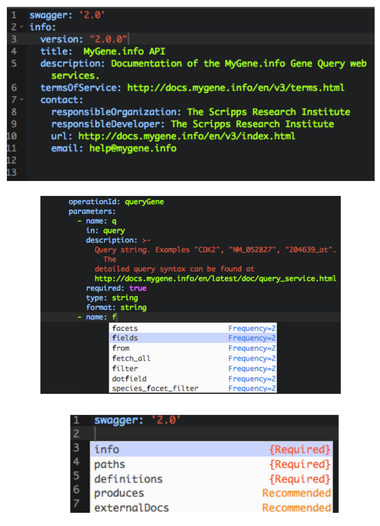
MAY
- Website
- Category
- Publications
- API Access Restrictions
- Access Point Mirrors
- API Metadata Format
- API Access Mode
- API Location
- API Implementation Language
- API Maturity
- Social Media Links



Faceted Search Inteface. We implemented a lightweight web-based tool to perform faceted search and filtering over the elasticSearch repository of smartAPIs descriptions.



Programmatic access with a REST API.



Enhanced Swagger Editor

Metadata authoring made easier. We augmented the Swagger Editor to ***autocomplete*** using the smartAPI Repository and enabled **validation** against the smartAPI specification. API Metadata can be **saved** to the smartAPI repository.

Acknowledgements

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