



Food and Agriculture
Organization of the
United Nations

Application Programming Interface (API) – Everything you need to know

The ABCs of APIs – Everything you need to know

What is an API?

API stands for Application Programming Interface (API) – and the keyword here is *interface*. In other words, APIs allow two or more digital applications or services to share data and information. Most people use APIs everyday without knowing it. Each time you use an app on your phone or computer, you are using an API to send data and/or information from one app to another.

How does an API work?

When developers decide to make some of their data available to the public, they *expose endpoints* – essentially, they publish a portion of the language they've used to build their program. This allows other developers to pull or retrieve data from the application and host it in another application entirely.

For this reason, if data is made available to the public, commonly referred to as *open data* - anyone can access the data using an *API call* which allows you to retrieve a piece of data - or *resource* - using a specific URL from one digital application or service to another, allowing the receiving application to show the data or information in their application.

Quick terminology crash course: an *API call* sends a specific *request* – usually using a URL – that *pulls* or retrieves the *resource* (the requested data or information) and when the requested resource is sent back, it is called a *response*. This is how two separate web applications or services communicate using APIs.

How are APIs used in the Hand-in-Hand (HiH) Geospatial Platform?

The HiH Geospatial Platform heavily relies on communication between multiple APIs to allow different components to interact with each other, resulting in the numerous services available to users.

This includes API requests from existing FAO digital applications and services that host numerous subregional, regional and global data and information as well as API requests from non-FAO digital applications – these are often referred to as *external API requests*.

External API requests are a key component of the HiH Geospatial Platform because they allow FAO developers to integrate data and information from existing digital services, already hosted somewhere on the web – and make them available in one place.

Time to get more technical – are there different kinds of APIs?

Yes, there are two main kinds of APIs. The most common open API architectures fall into two categories: REST APIs and SOAP APIs.

Learning about SOAP and REST APIs may seem more technical or more complex at first glance, but just remember that they exist to minimize confusion when assessing existing resources and how easy they are to integrate or note depending on what kind of API is being used.

SOAP API vs REST API

Representational State Transfer – or REST API still enables two digital applications to talk to each other, yet adds a component of order to the whole system. These rules are set out by the REST architectural style and serve to create standard protocols for what APIs should look like when they are created by developers. An example of one of these rules is that you should always be able to pull data and information by linking to a specific HTTP URL – no matter where you are in the world or on the web.

You can find REST-based Web services that output the data in many different formats: Command Separated Value (CSV), JavaScript Object Notation (JSON) and Really Simple Syndication (RSS). The benefit of REST APIs is that they offer multiple response formats and this makes it easier to integrate data and information from two different web applications.

On the other hand, **Simple Object Access Protocol – or SOAP API** relies solely on one format to send and retrieve data and information from other web applications. This format is XML.

Standardization and Data Protocols

Now that we know the ABCs of APIs, there are also important protocols to adhere into in the IT community. These serve to standardize the way a service may consume or produce messages or information shared with other services.

One example of this is the seamless integration in the HiH Geospatial Platform of GoogleEarthEngine (GEE) maps due to the OpenGIS [Web Map Tile Service \(WMTS\)](#) implementation standard. The HiH Geospatial Platform makes use of these standard geospatial protocols to simplify all back-end interactions and data integrations.

Additional links:

- ★ Standard geospatial protocols: [Open Geospatial Consortium \(OGC\)](#).
- ★ OpenAPIs vs Swagger:
<https://smartbear.com/blog/what-is-the-difference-between-swagger-and-openapi/>
- ★ Swagger OpenAPI specifications <https://swagger.io/specification/>

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