



Food and Agriculture  
Organization of the  
United Nations

# Agro-informatics Platform

*Application programming interface:  
everything you need to know*

# Introduction and purpose of this user guide

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This guide provides a clear and accessible overview of **application programming interfaces (APIs)** and their role within the FAO Agro-informatics Platform.

APIs are the backbone of digital communication between applications, enabling the exchange of data and services across systems. Every time you retrieve, visualize, or integrate information on the platform, APIs are at work behind the scenes.

By reading this guide, you will understand **what** an API is, **how** it functions, and **why** it is central to the design of the Agro-informatics Platform. You will also learn about the different types of APIs – such as REST and SOAP – and the standard protocols that ensure smooth integration of diverse datasets, including those from external sources.

Acquiring this knowledge is especially useful for users who want to **go beyond** the surface of the platform: developers aiming to connect their own datasets, analysts integrating external services, or practitioners who simply want to understand how the platform brings together information from multiple sources.

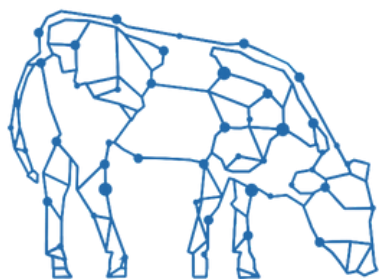
Ultimately, this guide will help you see how APIs make the Agro-informatics Platform more than a static tool – it is **a dynamic hub** for interoperable data, enabling stronger analysis, collaboration, and innovation.

## Resources

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Access additional resources through the provided links, offering a wealth of information and supplementary materials to enhance your understanding of the Agro-informatics Platform.

- **Website:** [FAO Agro-informatics Website](#)
- **Platform:** [FAO Agro-informatics Platform](#)
- **Documentation:** [Guides](#)
- **Youtube:** [Agro-informatics YouTube Playlist](#)
- **X:** [FAO e-Agriculture](#)
- **Email:** [fao-data@fao.org](mailto:fao-data@fao.org)



# The ABCs of APIs – Everything you need to know

## What does an API mean?

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 Agro-informatics Platform?

The Agro-informatics 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 Agro-informatics 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.

**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 Agro-Informatics Platform of GoogleEarthEngine (GEE) maps due to the OpenGIS Web Map Tile Service (WMTS) implementation standard. The Agro-Informatics 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](#)
- [Swagger OpenAPI specifications](#)

# Unlocking the power of data-driven solutions

This guide introduces the FAO Agro-informatics Platform, an innovative digital tool that integrates data, maps, and geospatial analysis to support decision-makers, technicians, and rural communities. It includes practical instructions and suggestions for exploring the platform's potential, promoting more inclusive, sustainable, and efficient management of agrifood systems.

**Find out more:** scan the QR code and access the FAO Agro-informatics Platform and workshop resources directly.



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