

## APPLICATION PROGRAMMING INTERFACES (APIs)

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### INTRODUCTION

Businesses are becoming increasingly aware that customer experience is the distinguishing factor from their competition. Transforming the customer experience is now a strategic business imperative. Customers of companies like [Amazon](#), [Netflix](#), and [Spotify](#) are expectant of impeccable levels of service, on-time delivery, and convenience. In today's society, a customer expects an [omnichannel](#), personalized, immediate experience, and if they do not find what they are searching for, [sixty percent of customers](#) will leave for a competitor. To fulfill this expectation, companies are turning to [application programming interfaces \(APIs\)](#). In this Tech Insight, we define what APIs are, their history and use, their relationship with the web and cloud, and the impact of APIs at the [Department of Veterans Affairs \(VA\)](#).

### WHAT IS AN API?

An API is a specification of possible interactions with a software component. For [example](#), if a car was a software component, its API would include information about the ability to accelerate, brake, and turn on the radio. It would also include information about how to accelerate: Put your foot on the gas pedal and push. The “what” and “how” information come together in the API definition, which is abstract and separate from the car itself.

When you type [www.facebook.com](#) into your browser, a request goes out to Facebook's remote server. Once your browser receives the response, it interprets the code and displays the page. To the browser, also known as the client, Facebook's server is an API. This means that every time you visit a page on the Web, you interact with some remote server's API. An API isn't the same as the remote server — rather it is the part of the server that receives requests and sends responses. To [summarize](#), when a company offers an API to their customers, it just means that they've built a set of dedicated URLs that return pure data responses — meaning the responses won't contain the kind of presentational overhead that you would expect in a graphical user interface like a website.

Today, APIs are the standard and rapidly becoming the building blocks of the web. APIs allow companies to provide a better customer experience to their users. API documentation is a must

to extend reach on the internet and create partnerships with the most active platforms and applications.

According to a [Forbes article](#), APIs connect pieces of software together. They 'glue' together any required information components around a system and are often 'released' to third-party programmers. As the software becomes an increasingly componentized, containerized intermix of cloud-based services, the API rises upwards as a key to opening this promised land of digitization that firms are so keen to achieve.

## **DOCUMENTING APIS**

API documentation is a concise reference that supplies developers what they need to know to work with another application. It contains the functions, classes, and other important notes about the API. This way, the developer who wishes to use another site's API does not hold his hand out in the dark figuring out how to interact with the site. There is no one way to code a site, meaning developers might not understand easily what APIs are telling them. With the help of documentation, they have a definite guide to help them code. Remember, not all developers are created equal. This is the main reason why API documentation is necessary. It doesn't mean that other developers are better, it just means that developers have their own 'styles' which may not be easily understandable to others.

[Gartner](#) research revealed that the [OpenAPI specification \(formerly Swagger\)](#) has become the de facto industry standard for documenting APIs to support identification of resource needs and related namespaces. Using this specification enables both technical and non-technical users to identify the appropriate APIs to support their business needs via the API platform. Based on this research, OpenAPI is a strong candidate for the official standard in VA. The decision regarding OpenAPI as the approved standard will be reflected in the [One-VA Technical Reference Model \(TRM\)](#) and Design, Engineering, and Architecture compliance criteria related to APIs.

If your site's API documentation is not up to speed, developers will be discouraged from working on it due to increased time demand. Additionally, it will cost your business more money.

## **HISTORY OF APIS**

In 1986, [Extended High-Level Language \(EHLAPI\)](#) API was [introduced](#) with the [International Business Machines Corporation \(IBM\) 3270PC](#). IBM 3270PC was a personal computer (PC) that incorporated an innovative coax adapter and had a special keyboard. It was targeted at people who were used to using terminals to access mainframes, but were now using a PC.

EHLAPI was developed as an alternative to [screen scraping](#). Mainframe screens were often “scraped” of their data, so that the data could be presented in [Graphical User Interface \(GUI\)](#), pronounced as either G-U-I or ‘gooey’, which allows the use of [icons](#) or other visual indicators to interact with electronic devices, rather than using only text via the [command line](#). For example, all versions of [Microsoft Windows](#) utilize a GUI, whereas [MS-DOS](#) does not. The GUI was first developed at [Xerox PARC](#) in [1981](#). As an alternative to this process, the EHLAPI could be called by an application to pass data to the mainframe screens. This allowed navigation by an emulator program to legacy applications. In effect, the program behaved like a user, inputting data and sending appropriate control keys to legacy systems. It was a useful bridge from the new [GUI technology](#), which used a common design format to legacy applications that did not have a standard interface design. The API allowed programmers to have PCs interface with mainframes in a way that was only done in the past with a dumb terminal.

In the early 90s, videogame developers figured out how to have a separate card to do the graphics processing. [Open Graphics Library \(GL\)](#) is the computer industry's standard [API](#) for defining two-dimensional (2D) and three-dimensional (3D) graphic images. Open GL was a way for developers to create software using a cross-platform language. This was very important at the time as hardware was changing rapidly, and it was difficult for software developers to adjust to the changes. Open GL is still in use today; the latest release is [version 4.5](#).

## **APIs AND THE WEB**

The web displays how useful and critical an API can be. In 2000, APIs became the best way for business applications to be able to share data amongst themselves. Social media has increased dependency of APIs as [Facebook](#), [Twitter](#), [Instagram](#), and others have shown what a widespread marketing and advertising tool they can be. In late 2000, [eBay launched the eBay API](#), along with the eBay Developers Program.

In July 2002, the modern web API movement kicked off. Amazon launched [Amazon Web Services \(AWS\)](#), allowing developers to incorporate Amazon.com content and features into their own web sites. [AWS](#) allowed third party sites to search and display products from Amazon.com in an [XML format](#).

In March 2006, Amazon launched a storage web service called [Amazon S3](#). Amazon S3 provided a simple interface that can be used to store and retrieve any amount of data, at any time, from anywhere on the web. It gives developers access to the same highly scalable, reliable, fast, and inexpensive data storage infrastructure that Amazon uses to run its own global network of websites. Six months later, Amazon followed with a new cloud computing service dubbed [Amazon EC2 or Elastic Compute Cloud](#). Amazon EC2 provided resizable compute capacity

in the cloud, allowing developers to launch different sizes of virtual servers within Amazon data centers.

In June 2008, the world changed as [Apple launched the iPhone 3G](#). The [App Store](#) allowed [iPod Touch](#) and [iPhone](#) owners to download applications through the [iTunes](#) desktop software or the App Store on their iPhones. Thus, opening an entire new world of mobile applications, one where APIs would be the driving force. Mobile was the final piece of the digital strategy puzzle, which included **commerce, social** and **cloud**.

### **APIs AT VA**

VA is embracing APIs and has implemented a new API project, API Management. API Management is the next-generation open digital platform that enables rapid innovation in core VA functions. This platform gives external developers access to the data and tools they need to build applications on a standard set of APIs designed for our Veterans. API Management leverages new analytic capabilities through the API gateway to integrate electronic health record (EHR) data. VA is looking to create a model EHR incidence with common data standards published in the public domain. The idea is to map the EHR to Fast Healthcare Interoperability Resources (FHIR) APIs. The API standard already received a Federal boost when the Center for Medicare and Medicaid Services [announced](#) that Medicare claims data would be available via Blue Button 2.0 using the FHIR standard.

### **APIs IN THE FUTURE**

In late 2017, Forbes Magazine outlined the factors driving 2017 to be the [year of the API economy](#), stating, “APIs are larger than any pending Initial Public Offering (IPO), recent acquisition, or merger.” The evidence is the [Programmable Web](#), which lists 16,590 APIs in its database. Later this year, thousands of developers will gather at the [API World 2018](#); the conference theme has already been announced: “The move towards decentralization of both public-facing and internal API architecture.”

Furthermore, APIs have changed the way we live, work, and shop. [Daniel Burrus](#), one of the World’s Leading Futurists on Global Trends and Innovation and author of international best-seller [Technotrends](#) said, “The old way to have power was by keeping things to ourselves. Today, we’re not gaining power by hoarding, but by sharing.”

To learn more about APIs and how to implement this tool within your IT project, view our [API Documentation Standard EDP](#) or [API Release Standard EDP](#).

## **TECH INSIGHT SERIES**

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