

API 101

APIs, also known as Application Programming Interfaces, at their most basic level, allows applications to talk to other applications, but they are so much more than this when you begin to explore the world of APIs further. APIs are slowly becoming part of every aspect of our personal, and business worlds, often even without us knowing. If you surf the web, and use a mobile phone, this explanation of what an API is for you. APIs are affecting your life right now, and with a little more understanding you can learn to identify APIs, and put them to work for you, even if you are not a geek.

863,105,652 Websites

There are 863,105,652 websites registered in 2015, making up what we know as the World Wide Web. In 2017 it is easier to build a web than it has at any other pointing in the history of the Internet, allowing any individual, company or organization to publish a website and even point a custom address to it.

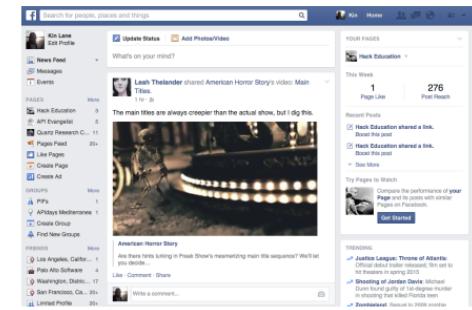
In 1995 only the most tech savviest had websites, and by 2000 many businesses realized having a website was the normal way of doing business. In 2010 many of the tech savviest companies had APIs, and by 2017 many businesses are realizing that having an API is the normal way of doing business--imagine what the Internet will look like by 2020.

Facebook

Websites like Facebook allow us to interact with friends and family, sharing messaging, photos, links, and other essential life bits, establishing a social platform for us to engage in our online lives.

Facebook is a daily destination for users around the world, with much of the interactions via an increasing number of mobile devices that all of us have in our pockets, has become the virtual community for our physical worlds.

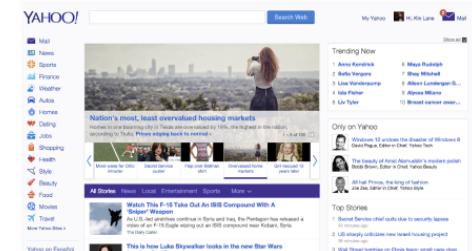
Facebook is a platform consisting of a website, and mobile applications all driven by the API platform, which provides partners and 3rd party developers access to all aspects of the platform from posting images, to buying advertising that targets specific users, in a specific region of the world.



Yahoo

Yahoo has long been a staple of the Internet providing users with access to their news, sport, weather, stock, and other important bits of our daily lives. Yahoo was an early player on the web, and continues to find new ways to compete in 2014 via the web and mobile.

Yahoo may not be what it used to be, but the company continues to innovate through acquisitions, and still plays a role as the home page for many users who were first introduced to the World Wide Web through Yahoo search and directories.

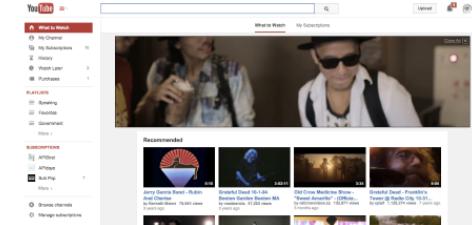


Youtube

YouTube provides us with hours of online entertainment, bringing home user-generated, and sometimes professionally produced videos, ranging from family home videos to music videos, and live concerts.

YouTube is quickly replacing the television of the previous century, re-inventing how we are entertained in our homes.

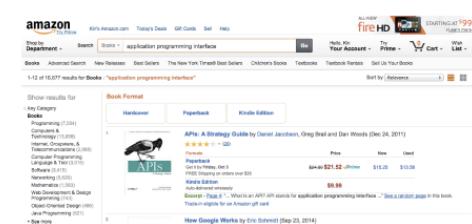
YouTube users often spend time watching videos on the main YouTube website, but also consume a considerable amount of videos using the universal embeddable video player allowing YouTube videos to be embedded on any website around the web, all driven by APIs.



Amazon

Amazon has made e-commerce part of the mainstream conversation, allowing us to order almost any physical, or digital product we can imagine from the vast warehouses that Amazon posses, as well as those of its affiliates. Amazon found got started with physical products like books, but in 2014 has led the charge in delivering virtual goods such as movies, e-books, and other online products consumers are craving.

Selling you products is just the first part of the conversation when it comes to Amazon, they also want to provide with consumer any possible channel they could possibly choose to purchase their products, including providing infrastructure for web, mobile, and tablet developers, and even producing their own tablet device, and supporting platform.



Twitter

Twitter allows us to send short, SMS style messages across the public Internet, and follow, or be followed by the people we find most interesting. Twitter has gone beyond just a messaging platform, or even a social network, and has become the pulse of the online world through its API driven platform.

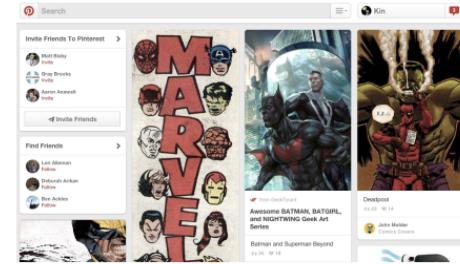
Everything you know about Twitter was originally developed using the Twitter API, its mobile applications, desktop applications, buttons, widgets, and other analytics and visualizations are all developed using the Twitter public API, which makes the entire Twitter platform available to developers.



Pinterest

Pinterest provides users with a simple, yet addictive way to share photos on the open Internet, and with friends. Photos play an important role in our lives, and Pinterest stepped up as a new way to express ourselves using these valuable photos and images.

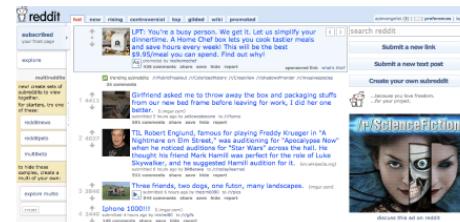
Only part of the interactions with Pinterest occur via their website, the majority of engagements occur through sharing on other sites and social networks, and via mobile applications that allow users to quickly share and express themselves with photos.



Reddit

Reddit is the home page of the Internet, providing users with links to the important stories, products, and conversations of the day. Redditors curate the best links that are submitted through the site, and through user engagements the best of the best float to the top for everyone to explore.

Reddit demonstrates the real-time network effect that we often associate with the Internet, providing a heartbeat of the best links being viewed, and engaged with across the Internet, making the trillions of web pages, across billions of websites accessible each day by average people.



Bits Of Our Life Across These Sites

All of these websites are built by other people, but as users of these sites we all leave a little bit of ourselves in these locations, each time we visit. Whether it's just a comment, photo, all the way up to sustained engagement via our mobile phones, we are consistently leaving ever growing footprint across this digital landscape of web sites, and mobile applications.

It has taken decades to go from just a handful of the first sites on the World Wide Web to the 861,379,000 we have in 2014. It is taken the hard work of web site designers and developers to make these sites a reality, but increasingly through the use of API driven interactions via 3rd party websites and mobile devices, all the information on these sites are being generated by YOU, the user.

Game
Music
Video
Email
Likes
Views
Posts
Follow
Stocks
Sports
Clicks
Comments
Images
Links
Payment
Votes
Messages
Friends
Tweets
Weather
YoChats
Books
Blog
News

Hand Written Websites Using HTML

In the early days, all websites were hand coded, with web designers writing all the HTML, and building their own images. Individuals spent numerous hours maintaining each page across vast sites, and often hired large teams help maintain single sites that could span millions of actual web pages.

As the number of websites grew this became even more tedious to maintain, but savvy designers turned developers were finding innovative ways to create, publish, and maintain the growing number of websites. While some websites are still hand-coded, the majority of sites are generated, published, and maintained by an ever evolving set of web development software, and Software as a Service (SaaS) platforms.



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Website Content Was Coming From Databases

Eventually the concept of a database driven website came to be, allowing websites to evolve from sites into applications, and all the content across a website was stored in a database. Now your site was more than just publishing content from a database, you also allowed users to interact, purchase, and generate content as well.

Databases allowed websites to evolve, and go beyond just content publishing, potentially making their websites not just about the delivery of valuable content, but you could also encourage users to create content either knowingly or unknowingly, and not just on a single website, but across hundreds or thousands of sites around the world.



Adding An Amazon Product Widget

Along the way it became clear that it wasn't enough to have just your products on your website, or maybe you were a content site and didn't have your own products. Either way, users needed a way to put widgets, and other syndicated content on their site, which would pull products from other sites, which is something Amazon became very, very good at.

API driven content widgets became a great way to publish products onto the growing number of blogs, review, and other sites that were popping up across the Internet. These approaches to content delivery proved to work not just for product owners, but eventually any content could be syndicated across websites using simple, small, embeddable widgets, benefitting an entire network of connected sites.



Add A Delicious Bookmark Widget

As the social evolution of the Internet began, links to valuable content, and the social influence behind these curated groups of links became apparent. It wasn't just about bookmarking your favorite sites, it was about grouping, curated, and sharing of this content across any website that would have you, using embeddable tools.

Curated links often show as spammy advertised links, but can also show relevant links based upon what you are searching for, what your friends are doing, and in other ways, that makes the embedding of links, or groups of links, an important way to share information across the Internet.



Add Twitter Widget

With the social movement in full swing, just posting links to your favorite sites was not enough. Users wanted to be able to communicate in real-time about the sites they were visiting, what they were reading, watching online, and increasingly what people were doing offline. With the introduction of Twitter users wanted to be able to show what was on their mind, not matter where website it was on the internet.

Widgets were now allowing every piece of your life that was generated online to live beyond just the website where you created it, and could travel around from any website, to any other site or application that it could. Embeddable content and tools elevated the World Wide Web beyond just any single site, it was a distributed Internet now.



Content Comes From Many Databases & APIs

If you were a website developer, your website content no longer comes from any single database. You were pulling your content from a variety of databases, and API resources that you may or may not own. Product sites like Amazon, and social networks like Twitter were emerging, equipped with APIs they were generating content, and allowing it to come in from, and be published back to any website on the open Internet.

Having a direct database connection to your content wasn't enough anymore. You needed to have APIs so that trusted partners, as well as potentially the public, can get access to data, content and other information, for use across other websites, anywhere on the Internet. Just as this concept was spreading across the Internet, another thing happened, that would forever change how we interact online.



Then The iPhone Happened

On June 29, 2007 the first edition of the iPhone was released, and slowly over the next 3 years computing would undergo a transformation, building on existing approaches that first were used to distribute content to website, but would also prove to be low cost, efficient ways to distribute content to a growing number of mobile devices.

While the iPhone is just one of many mobile devices being manufactured today, it did set in motion a new way of designing, and developing applications that could run on the web, or mobile devices, anywhere in

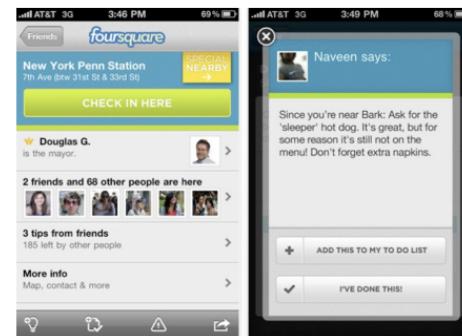


the world using simple web-based APIs. Mobile application development has brought many changes to the world of compute, but simple API access to valuable data, content, and other resources has been the most significant.

Foursquare

Mobile applications came with the simple knowledge of your location, as well as where you were at online, enabling a new form of communication, called the check-in. A new breed of mobile apps like Foursquare allowed users to see where they were, find friends, as well as places and experiences nearby, making the Internet a more local affair.

From this point forward, the longitude and latitude of each online user would be an option when receiving messages, photos, videos and other life bits from users, changing how we think about developing applications--it was a mobile app world now.



Instagram

In addition to knowing the location of each application user, each user was potentially given a high quality, internet enable camera on their mobile device. With the ability to take a picture, anywhere, anytime, new applications like Instagram emerged providing users with new features, and social capabilities built around photos.

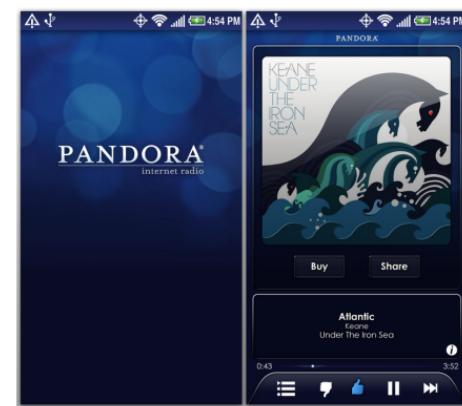
Photos continue to be one of the most important, and valued life bits that we can generate across the Internet pipes, providing a very basic ingredient for use in online communication. This is something that would prove essential to users of all ages, from teens all the way up to grandparents discovering the potential of web and mobile apps.



Pandora

As with photos, music plays a central role in our life, and it is no accident that along with the introduction of the iPhone, Apple brought along its successful model for a music platform centered around their portable music player, the iPod. Music is an extremely valuable space when it comes to our life bits, something developers and platforms are looking to capitalize on by delivering the next generation of music apps.

APIs are stimulating our musical tastes beyond just our Pandora or Rdio playlists, by allowing us to interact with friends, watch videos, purchase concert tickets, buy merchandise, and much, much more. The music industry has been slow to change, but ultimately consumer interests are winning out, and the industry is slowly understanding that a mobile experience is where today's music experience is at.



APIs Are Powering Websites

APIs have been powering websites for almost 15 years now, delivering data, content, and other digital information to the websites we use everyday like Amazon, Twitter, and Pinterest. The average website gets its content from a variety of API driven resources, both from public and private sources, making the aggregation of content a viable business model in 2014.

Using content management systems (CMS) like WordPress, combined with API driven plugins, anyone can be a curator of content, providing a website where users can find stories, photos, videos, and other valuable resources. In 2015 WordPress will also launch its own API, which will give 65 million websites their own API, turning many average site owners, into API providers.

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API Are Powering Mobile Apps

The number of mobile phones in our pockets will reach 7.3 billion in 2014--equally the population of the



world. Of course not everyone has a cell phone, but it shows the ubiquitous nature of these devices, and shows the size of the opportunity to provide API driven resources like messaging, products, images, videos, and the other life bits we generate, and depend on each day.

Web APIs are well suited for sending and receiving the small, bite-size chunks of data, content, and other digital resources we use through our personal and business worlds. Mobile apps are not just being developed by the latest tech start-ups, mobile apps are becoming the normal mode of operations for companies, organizations, institutions, and government agencies of all shapes and sizes.



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APIs Are Powering Buttons, Badges, and Widgets

APIs break up our valuable data and content into small bite-size chunks for transmission to mobile devices, but also so that they can be moved around the web, and published to where we need them. APIs are powering a wide range of buttons, badges, and other widgets that are making any single website, into a globally distributed network of content publishing and creation.

Buttons, badges and widgets are extending likes, follows and favorites from your favorite social network to any other site you may be reading or participating on, providing a bridge between all of the application you use on the web and your mobile devices. Facebook is a big part of the identity of any online user, and being able to log-in, share, and participate on the open Internet using our Facebook profiles has become normal for the average Internet user.



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APIs Are Powering Spreadsheets

APIs are quickly finding their way beyond web and mobile applications, and are being used in spreadsheets to provide the data needed for business calculations, analysis and visualizations. A large amount of the world's data exists in spreadsheets and the next wave of API developers are currently spreadsheet administrators, they just have not been informed that they can get the data they need via APIs.

The days of emailing around spreadsheets, having out of date excel documents strewn here and there, is going away. Spreadsheets are connecting to APIs using excel connectors, and online using Google Spreadsheets. Spreadsheets are being constructed to make sense of Tweet streams, aggregate comments or messages, and number crunch the latest industry numbers from the government.



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APIs Are Powering Devices

I'm not exaggerating when I say APIs are penetrating almost every aspect of our world. APIs are being used to connect physical devices in our lives like thermostats, smoke detectors, automobiles, clothing, glasses, and just about every object you can imagine, and some you can't.

A wave of new start-ups, calling themselves Internet of Thing companies, have emerged to build on the API movement, extending the low-cost, simple approach to delivering resources to the physical world around us. Using APIs, the Internet is moving offline, and wiring up almost every aspect of our personal, public, and professional life.

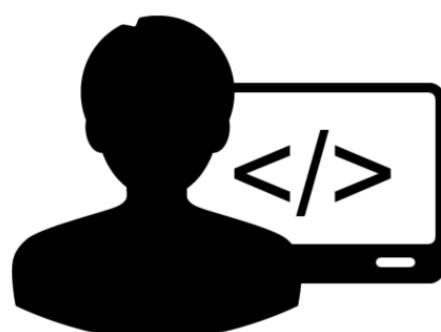


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APIs Are Not Just For Developers

APIs are not just for developers. If you can use a web page, you can use most APIs. There are a great deal of educational materials (like this), to get you up to speed with APIs. API providers are also working to make it a priority to focus on non-developer users, such as data journalists, analysts, and many other non-programming user types.

Even if an API has a more developer focus to it, often times you can just ask questions of the community, or the API provider and they will help you understand the value an API delivers, and how you can possibly put it to use. One of the characteristics of Software as a Service (SaaS) applications that people are using, is there is an API behind the scenes, something that only the API savviest of users are aware of.



Orchestrate Using APIs With Zapier

A new generation of services have emerged, acknowledging the wealth of API resources available, and the growing number of SaaS applications that have APIs, and are delivering tools that help anyone put APIs to



work. Services like IFTTT and Zapier provide very simple recipes that allow anyone to migrate content, data, and other digital resources between online platforms--no code necessary.



These API enabled orchestration platforms allow anyone to automate, migrate, and keep their online worlds in sync. These services are targeting non-developers, but provide such instant value, they are often used by programmers to make their worlds go around. This approach to using online services, is allowing companies, organizations, and even individuals to find new found freedom and control in their digital lives.

Making Companies & Organizations More Nimble & Agile

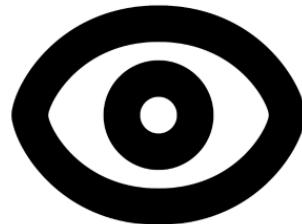
Companies are learning that when they make all data, content, and other digital assets available via well designed, simple, and modular APIs over the Internet, they find a new nimbleness and agility in how they operate internally, engage with partners, and even are able to interact with the public at large.

While APIs are technical in nature, their simplicity, and efficiency are meant to make things more accessible, in simple but secure way, using the path of least resistance. Historically valuable digital resources are locked up by software developers and information technology groups, API developers are looking to change this, making resources available to as wide of an audience as possible.



Helps Companies & Organizations Be More Observable

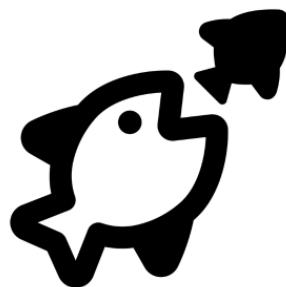
Another aspect that is transcending the technology of APIs, is the openness and transparency it can introduce into company, organizational, institutional, and government operations. This isn't always good by default, but when done properly it can let a little sunlight into a potentially closed process, and eliminate some illnesses that occur behind closed doors.



Of course, when it comes to business, sometimes transparency can work against you, but many corporations, and young start-ups find that being closed can hurt not just potential competitors, but also slow your own company in finding success. As we've learned from open source software, openness can actually boost security, privacy and many other concerns, and a true approach to using APIs can bring some of the same effects to organizations of any size.

Allowing Companies & Organizations To Be More Competitive

The ability to rapidly design, develop, deploy and iterate websites, mobile applications, while also empowering workers to be more effective via API driven spreadsheets and widgets, is giving companies a competitive edge. APIs open up a new way of doing business that the savviest of online businesses are participating in. There is a stunning amount of investment for start-ups looking to disrupt even the most entrenched industries, and companies, but it also doesn't take a start-up to make change, and many large businesses are also taking notice and getting to work on their own API efforts.



In the next five years, it will become evident which companies, and organizations do not have APIs, as they will not be participating at the levels of API driven companies. Large organizations will not be able to keep up in an always on, real-time business environment, something that APIs power across multiple channels including web, mobile, devices, and other ways of doing business online, in this new environment.

Empowering Individuals To Take Control Online

The most important thing APIs are bringing to the table, is the empowerment of the average online individual. APIs are providing access to much of the data and content we are generating online. APIs are how we can get access to the photos of our children on Facebook, and our home videos we've shared on YouTube. APIs are not just about driving business innovation, it is how the average user is taking back their digital self from a growing wave of data hungry start-ups.



API literacy is much like financial literacy. You don't have to understand the inner workings of banking and credit card industry, but you damn sure need to be educated enough to understand who has access to your bank account and credit card statement. With API literacy you don't have to understand how APIs work, but you should only use online services that have an API, and know who has access to your data and content, while also being able to download and walk away with your own valuable information that you have

APIs Are Important, Please Keep Learning

This is just the first of a series of 101 tutorials on the world of APIs. On the home page of API Evangelist you can find other tutorials on providing APIs or consuming APIs, and the research that went into this material. I have other research areas like real-time, and voice APIs, which as I have time will be generating 101 tutorials for--let me know if there are any of them I should prioritize

I will be adding new tutorials as I have time, until then you can tune into the news stream from each area of research on the API Evangelist network, as well as tune into the API Evangelist blog for the latest analysis on the business of APIs, and the API.Report the latest in news from the API space.

