If you live in the world of technology, you probably don’t need much convincing that APIs are an important trend with significant business impact. But if you are not immersed in the world of technology, it may not be as obvious why APIs matter to your business.

APIs are breaking out into more and more business arenas every day. The arguments we present in this chapter should help demonstrate to those outside the world of technology the importance of APIs. We also intend to offer a script for prime influencers that must convince others about the value of adopting an API strategy.

Today, we are seeing an explosion in consumption models. Why? Largely because of apps and mobile devices. We are rapidly moving from about a billion laptops with web browsers to as many as a trillion connected devices with apps by 2020, if we go by De Beer’s estimate. Most companies are seeing their customers move quickly beyond browser-based web apps. If you want to continue to be successful—or even stay in business—you need to be where your customers are!
Additionally, the pace of change is faster than ever. Markets are changing so fast that you can’t spend enough time to calculate market size, conduct focus groups, plan, develop, launch because by the time you do, the market niche may be gone or fundamentally changed.

Your customers are quickly moving from a browser-based model to a model of consumption that involves consuming your services through apps on mobile devices.

End users use a large number of different connected device types, social networks, and various forms of messaging to access the information and services they need. They often move from one way of using a company’s services to another, and they expect their applications to keep up with them as they move. For example, it is not at all uncommon for someone to start watching a movie streamed by Netflix using a WiFi-enabled TV but finish it on a different device, such as their iPhone, while waiting at the doctor’s office.

The same is true for reading a book. The bookmarks and comments that you store on your Amazon Kindle also show up when you read the same book using the Kindle iPad app, or the Kindle app on your computer. You can buy a book on the Amazon Android app and then read it on your computer. And if you start reading on one device, when you load the same book on a different device, Kindle can open the book on the page that you were on when reading on the first device.

What’s probably behind all of these app experiences? Behind most of these great apps is a great API. APIs can be thought of as the “backend” of an app, enabling the app to reach into a company’s data or services. APIs are key to enabling a rich app ecosystem that extends customer reach.

Although all of these experiences could be possible without APIs, the pervasiveness and the rate at which companies with strong APIs are progressing would not be possible. APIs make it relatively easy for companies to scale up dozens or hundreds of implementations in a relatively short period of time. Some of these scenarios were difficult to support at first, but they are getting much easier. Practices for successfully using APIs are slowly emerging, and technology infrastructure to support them is maturing. Market conditions have changed in ways that make APIs relevant to any business with assets that others would like to use. It is not just the largest companies in the world or the hottest startups that can benefit from APIs.

For example, Sears provided its massive product catalog, perhaps the deepest and most complete catalog in the world, for developers to place on their websites or in apps. In doing so, they’ve been able to increase distribution and sales.

The World Bank offers data for developers to use and create apps that can create further awareness of global economic development issues, providing new ways for people to
explore the data. StatPlanet is one example of an application built using this API, which offers interactive maps, graphs, and timelines (see Figure 2-2).

Figure 2-2. StatPlanet

Even Proctor and Gamble has gotten into the app game, having its signature toilet paper brand, Charmin, sponsor an infamous app for finding public toilets. Now there’s a creative way to promote brand loyalty!

The Growth of APIs

Evidence of the growth of activity related to APIs can be tracked by looking at public APIs. This is simply because private APIs are, well, private, and therefore more difficult to track. ProgrammableWeb.com tracks the creation of publicly accessible APIs. The accelerating growth of such APIs is shown in Figure 2-3.

Figure 2-3 represents just a fraction of the APIs out there. ProgrammableWeb does not track many kinds of APIs, which, if included, would increase the total number of APIs by a substantial margin, perhaps even exponentially. Most of the generalizable statistics we have come from the world of public APIs, but our experience indicates that private APIs are enjoying a similar burst in growth. Moreover, we believe that private APIs are already substantially more important to most companies than public APIs.

A look at popular consumer and business services shows how APIs have become the primary conduit for traffic. Sites like Twitter, Google, Netflix, eBay, Salesforce.com, and others now get more than half of their traffic through APIs. Consider the following statistics:
Figure 2-3. Accelerating growth in public APIs (source: ProgrammableWeb)

- Twitter: More than 15 billion calls per day as of July 2011, with 75 percent of traffic coming through the API
- Netflix: More than 1 billion calls per day as of October 2011
- Amazon Web Services: More than 260 billion objects stored in S3 as of January 2011
- NPR: 3.2 billion stories delivered via the API per month as of October 2011
- Google: 5 billion calls per day
- Facebook: 5 billion calls per day

In the face of this sort of evidence, clearly APIs are becoming a conduit for a tremendous volume of communication and commerce. As with many technology trends, the first movers are technology-savvy startups. They are being followed by a whole raft of newer arrivals to this space who have started building API-based channels. Such companies include financial services firms like TradeKing, media companies like NPR, The New York Times, USA Today, Financial Times, and The Guardian, retailers like Best Buy, Tesco, Sears, and Amazon, and automotive companies like Ford and General Motors.

The use of APIs by companies who do not make their use widely known is also increasing. Many companies are reinventing the way applications are built within their own enterprises by exposing their existing assets as APIs, enabling their internal developers to build innovative new mobile, social, and cloud apps. Many of what you may think of as “traditional enterprises” are employing APIs to increase their overall agility in delivering applications and to open up new opportunities for dealing with partners.
Why You Might Need an API

How do you know whether you might benefit from having an API? Here we present some common triggers that have inspired companies to create an API.

You Need a Second Mobile App

When companies realize they need a mobile application, time is typically of the essence. The first mobile application is usually created quickly in response to a pressing need and written to run on at least one of the most popular platforms at the time (right now, iOS and Android). This sometimes results in leveraging existing technologies, like extending RSS (Really Simple Syndication) feeds, to meet the short-term targets. When it comes time to create a second mobile application, however, it dawns on the company that they are at risk of repeating a great deal of work. When that happens, they begin to look for ways to make mobile application creation more efficient. How could other devices leverage the same system? Are there any repeatable components? Might providing a private API encourage others external to the service tier of your company to do some of this work?

If your mobile app strategy is a success, you will need apps that run on iOS and Android. And then it might need to run on Windows Phone. Then don’t forget about RIM. And then all of the emerging tablet devices. The point is that, depending on your company’s strategy, mobile applications may need to run on two, three, or even more platforms.

The creation of mobile apps to support a variety of devices often leads to a discussion about creating an API. An API can help companies support multiple devices.

Your Customers or Partners Ask for an API

Sometimes sophisticated customers or partners ask if you have an API to help make a technical integration easier. For example, Silverpop, an email marketing company, found that once the largest companies in the world started using its product, the companies wanted tight integration of email marketing capabilities and other marketing automation applications. The obvious solution for this integration was an API.

Getty Images, a photo-licensing firm, had customers who wanted to bypass the firm’s website and integrate photos for licensing in their publishing and production applications. The obvious solution here was also an API.
APIs improve on older technologies for interacting with customers. File transfer, EDI, IBM MQSeries channels and the like are all much more cumbersome ways to interact directly with customers’ systems than a modern API.

AccuWeather never anticipated what would happen when one partner asked for an API. “The AccuWeather API started really without full architecture review and planning. We viewed it as a one-off request,” admitted Chris Patti, Director of Technology. “We had a request from a major handset manufacturer for a widget to expose another data feed via HTTP. We put a junior developer on it. Then we saw demand for more types of data—radar and imagery.” It didn’t take long before it picked up steam. “Next thing we knew—every customer wanted it. We couldn’t have imagined what it turned into. This wasn’t a line of business—it just showed up. We knew we needed to react fast and plan, but time was not on our side.”

Your Site Is Getting Screen-Scraped

If your site is getting screen-scraped, this could be considered a sort of passive-aggressive request for a public API. You obviously have business assets that developers would like to access. Offering an API lets you exert control over your data and the terms of its use. The best way to determine your next steps is to talk to the people doing the screen scraping to see what they are trying to do.

You Need More Flexibility in Providing Content

The ultimate reason for offering an API is to provide content or services in a flexible way. Originally, that’s what websites were for (and they still are). When companies first looked for new ways to distribute their content beyond the website, many turned to methods like RSS feeds. For a variety of reasons, neither websites nor RSS feeds are enough to handle the flexibility most companies need these days. APIs can provide the ultimate level of flexibility for providing content when and how you want to, under your terms and with better control, while meeting your users’ needs.

You Have Data to Make Available

It is quite common for companies or government organizations to have treasure troves of data that they have no time to make use of. For example, the Metropolitan Transit Authority (MTA) in New York City has information about the schedules, routes, and operational status of the subways. Instead of keeping this information under lock and key, the MTA created files in Google Transit format so that Google developers can use this information to create applications. Dozens of applications were created using the data. The Federal Aviation Administration (FAA) has done the same thing with data about commercial flights.
The same model works inside companies when a department has an important database that it does not have time to use. A private API can allow other departments to benefit from the data.

Data distribution is an important API function for content providers. For example, NPR allows member stations to write their own content into a private writable area of the NPR API. A particularly compelling use-case is Northwest News Network (N3), a network of 11 radio stations in Washington, Oregon, and Idaho. N3 creates stories and aggregates stories from the other 11 stations in an effort to act as a redistribution channel for the entire N3 network. N3’s solution is to compile the stories for the network and write them into the NPR API. From there, each of the 11 stations can access individual stories, stories from a particular N3 station, or stories from the entire network through the NPR API to present the N3 content on their own sites and apps.

**Your Competition Has an API**

When one company in an industry publishes a public API, it is quite common for the rest of the industry to follow suit. In a way, this is a more general case of a customer requesting an API from a particular company. In this case, all of the end users in a market are in effect requesting an API from an industry. Certain clusters like retail, video, media, and social networking are effectively in an arms race with respect to their APIs. They are constantly trying to improve them and outdo the competition.

**You Want to Let Potential Partners Test the Waters**

When a potential partner wants to do business with a company, the company can steer them to an API that allows the partnership to get started. By adjusting the terms of the API properly, it is possible to let potential partners start experimenting with the API and converting to a more formal partnership when the partnership starts to generate enough mutually beneficial revenue or traffic. An API removes barriers to experimentation.

**You Want to Scale Integration with Customers and Partners**

Having an API provides a simpler and more flexible way to integrate with high-volume customers and partners. Customers who have their choice of vendors are attracted to companies that are set up to succeed quickly. An API sends the message that you are in such a position.

Traditionally, industries have created complex and proprietary ways to integrate. The financial services industry, for instance, created a large and complex network of technologies and services, including such successes as the SWIFT consortium, the FIX protocol, and the FpML standard. The travel industry created the largest-scale transaction processing systems of their time through reservation platforms such as SABRE. Other
industries banded together to create further standards such as EDI, and still others relied on file transfers, emails, faxes, and computer tapes sent via FedEx.

Today, API technology—HTTP, REST, and JSON—is significantly simpler than all those options, pre-built for the Internet, and understood by a growing community of software professionals. A company looking for a way to connect to high-volume customers or an industry organization looking for a new way to connect its members would need a very good reason to choose any other option.

### The Origin of the Innotas API

Innotas provides cloud solutions for IT management. We spoke with Tim Madewell about how the company decided to offer an API.

**Why did Innotas decide to offer an API?**

We had a compelling event—a customer needed it.

In the early days of our company, our average customer size was 25-30 users, but as our deal size grew and the SaaS market became more mature and accepted as an enterprise software solution, we started working with larger enterprise customers and the product needed to expand to meet the needs of an enterprise architecture as opposed to being a standalone tool.

So when we landed our first 5000-user account, we found that one of many requirements was that we enable integration from their backend CRM, HR, and billing system.

The API enabled us to offer this integration in a way that is standards-based so that it can be consumed by many customers and was flexible enough to be used by customers in many ways. We took a coarse-grained approach by building the API on a standard model that first offered our major data entities supporting backend enterprise systems such as CRM, HR, and Financials. We continued to release updates to our API with each product release that exposed additional data entities. One important distinction we made early on was to leave the business processes and business transaction logic outside the API and in the hands of the customer. Instead, we provided access and exposed the building blocks (data entities) for our customers to design and implement application-specific business transactions.

The API enabled us to offer this integration in a way that many customers could use it. We built the API on a standard model that first offered our major data entities.

Exposing the API where the customers can “come and get it” worked well for large customers. They have the resources to take the API and run with it to make the integration happen.

In hindsight, offering an API for integration was a good decision early on. It gave our customers a lot more flexibility in deciding what to do and gave Innotas the opportunity to be part of the customers’ enterprise solution architecture.
An API Improves the Technical Architecture

Sometimes, building an API will simply improve the system’s architecture for technical reasons, as opposed to business reasons. The NPR API was originally built for this reason. In 2007, NPR’s digital properties were all served by a single Oracle database, which represented a single point of failure. The systems team needed to migrate this database to a MySQL cluster to allow for redundancy and scalability. But at the time, the NPR website, the CMS, and the database were too tightly bound to each other. The solution was to build an API between the website and the database. Once the API was built and the website was refactored to draw from it, the work to swap out the Oracle database for the MySQL cluster was substantially easier. Creating a separation layer between the systems allowed much more flexibility for the migration.

There are many, many more reasons for offering an API. The main point is: listen to your partners. Listen to your customers. Listen to your internal developers. See the way the industry is going. Consider how you might want to go there as well.