

If Software is Eating the World, are APIs Devouring the World?

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1. Introduction

Venture capitalist Marc Andreessen wrote a seminal op-ed "[Why Software is Eating the World](#)" in *The Wall Street Journal* in August 2011 when H-P coincidentally announced it would restructure its struggling PC business and invest more heavily in software. Since software applications can't be built without application programming interfaces (APIs), comprising a set of routines, protocols, and tools, we believe APIs are devouring the world.

2. History of APIs

The concept of APIs or software is nothing new. If we agree on the premise that software is essentially recipe do complete a task, we could argue that ancient Egyptians had a 'software' graphical recipe for making bread (Figure 1).

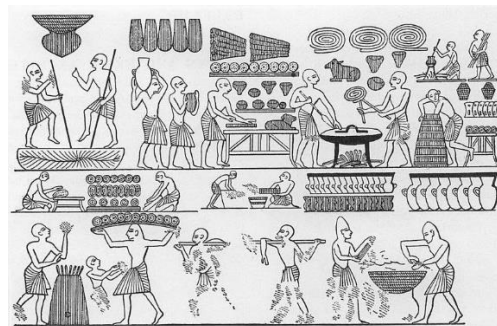


Figure 1. [The Court Bakery of Ramesses III](#) (circa 12th century BCE)

Andreessen's claim that software is eating the world is true, but that doesn't mean hardware is dead. Software can't run on PowerPoint slide-deck vacuumware, but *needs* hardware to run on. Yes, hardware—servers, storage, networking gear—prices are tumbling and profit margins are declining. Software still commands high prices, but even they are being challenged by the proliferation of open source software. Regardless of the software model—open source or proprietary—APIs still play a major role in software application development.

Another interesting observation is the impact Internet and software have on companies. According to a study by Yale University professor Richard Foster and consulting firm [Innosight](#), companies listed in 1958 on the S&P 500 Index had stayed there for 61 years. Today, they stay there for about 18 years and this will be down to about 13 years by 2030. This doesn't mean they will go out of business, but will become less influential. There may be other factors, but it's safe to say that software-driven Internet has risen at the expense of many corporations' lifespans.

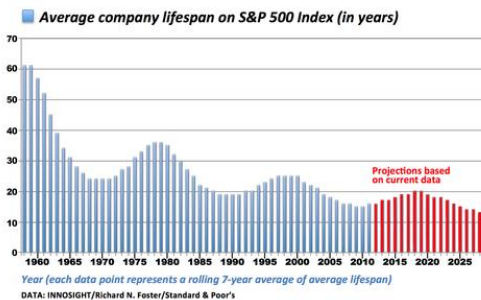


Figure 2. Lifespan of Companies on the S&P 500 Index

3. APIs' Relevance Today

Simply put, APIs are sets of requirements that direct how one application can talk to another. Whenever you use a desktop or laptop, APIs make it possible to move information between programs—for instance, by cutting and pasting a snippet of a PowerPoint deck into a Word document. System-level APIs make it possible for applications like Microsoft Office to run on top of an OS like Windows.

The Web is a classic example of the prolific use of APIs. Applications like Apple Maps, Google Maps, and Facebook let other apps “piggyback” on them. Thus, for example, when you search for a nearby Italian restaurant on Yelp, it returns a list of them on Google Maps instead of creating its own maps. This is one example of *mashups* where the Yelp app passes, via the Google Maps API, the information it wants plotted—restaurant addresses, along with the Yelp star rating, and more—to an internal Google Maps function that then returns a Map object with restaurant pins in it at the proper locations.

Examples of mashups abound, but one good example is [TripCase](#) which gives travelers a single place to manage and organize their trips, using APIs from a variety of vendors in the travel business (Figure 3).

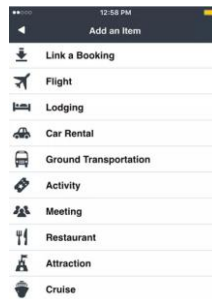


Figure 2. TripCase Application

Exposing APIs is not just limited to high-tech vendors. Organizations as diverse as ANZ Bank, Chicago and New York transit systems, The World Bank, Virgin Atlantic, Walgreens, and WestJet all expose their APIs for partners and customers.

4. APIs Market Forecast

APIs by themselves are not direct money-makers because vendors expose them and often give them away for free to promote their products. What makes money is *API Management*. Enterprises are investing in API-driven initiatives in analytics, big data, business integration, cloud, and mobile. This market is expected to reach ~\$660 million by 2020 (Figure 3), not a huge market by any means.

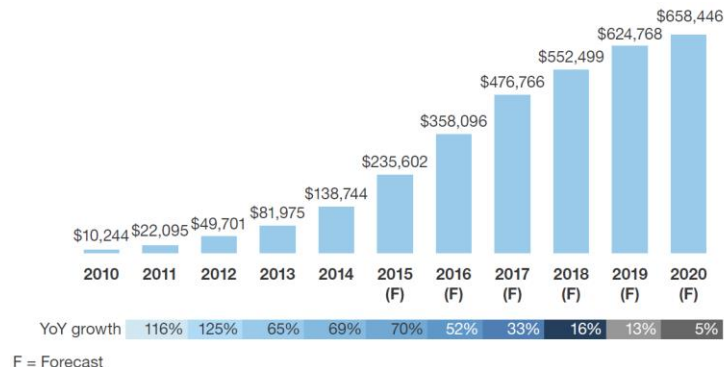


Figure 3. US API Management Spending Forecast (Thousands, US\$)
CAGR: 30% ('14-'20)¹

¹ "Sizing The Market for API Management Solutions," by Randy Heffner and Michael Yamnitsky, Forrester, April 2, 2015.

5. API Management

Any discussion of APIs is incomplete unless we delve into how they are managed.

APIM was born as a result of the robust growth of service-oriented architecture (SOA) in the last decade. Early focus was on SOA deployment, governance, registry, repository, orchestration, and choreography. Over time, registry (think of a bridal registry) and repository (think of Fort Knox) mostly merged, with the latter subsuming the former, because one could deploy an SOA without a registry, which is essentially metadata about the repository, although this would make navigation more difficult. Imagine a brick-and-mortar library without an online or a physical catalog (registry): You would have to walk to each bookshelf (repository) until you find what you are looking for.

Also, early SOA deployments were for internal consumption or known customers. As SOA matured, vendors realized they could monetize if they started opening and managing their APIs to the external world—consumers, partners, etc. So, it is fair to say SOA governance has morphed into API Management.

About five years ago, there were just a handful of leading APIM vendors:

- SONOA Systems (née 2004, now called Apigee)
- Layer 7 (acquired by CA Technologies in 2013)
- LongJump (acquired by Software AG in 2013)
- Mashery (acquired by Intel in 2013 and sold to TIBCO in 2015, now integrated into CloudBus)
- Vordel (acquired by Axway)

Currently, the active players, in addition to the above, in this space are [3Scale](#), [Akana](#) (formerly SOA Software), IBM (integrated into [BlueMix](#)), Microsoft (integrated into [Azure](#) PaaS platform), [MuleSoft](#) (integrated into CloudHub), Oracle, and [WSO2](#).

6. Conclusions

As we noted before, the API market is small and the API Management market is forecasted to be well below US\$1 billion by 2020. However, enterprises will use them to improve customer user experience, IoT, process optimization, supply chain streamlining, and other use cases.

7. Acknowledgment

I was motivated to write this report following a lively discussion on APIs I had recently with my friends and former colleagues [Ken Seitz](#) and [Jeff Olson](#).