

[Seven Years After Alice, 63.2% of the U.S. Patents Issued in 2020 were Software-Related \(ipwatchdog.com\)](https://www.ipwatchdog.com/news/analysis/2021/03/17/seven-years-after-alice-63-2-of-the-u-s-patents-issued-in-2020-were-software-related/)

# Seven Years After *Alice*, 63.2% of the U.S. Patents Issued in 2020 were Software-Related



By **Raymond Millien**  
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“Looking at the top 15 software-related U.S. granted utility patent assignees, there was a 23% increase in the total number of granted patents in 2020 when compared to 2019.”



As an update to my posts from [2017](#), [2019](#), and [2020](#), it has now been more than seven years since the U.S. Supreme Court’s 2014 [Alice Corp. v. CLS Bank](#) decision. Yet the debate still rages over when a software (or computer-implemented) claim is patentable versus being simply an abstract idea “free to all men and reserved exclusively to none” (as eloquently phrased over 73 years ago by then-Supreme Court Justice Douglas in [Funk Bros. Seed Co. v. Kalo Inoculant Co.](#)). Further, it has been 10 years since famed venture capitalist [Marc Andreessen](#) wrote an influential op-ed piece in the *Wall Street Journal* titled “[Why Software Is Eating the World](#),” where he correctly predicted that:

*More and more major businesses and industries are being run on software and delivered as online services—from movies to agriculture to national defense. Many of the winners are Silicon Valley-style entrepreneurial technology companies that are invading and overturning established industry structures. Over the next 10 years, I expect many more industries to be disrupted by software, with new world-beating Silicon Valley companies doing the disruption in more cases than not.*

Portions of this op-ed have no doubt been cited in millions of corporate boardroom, B-school, and startup pitch deck PowerPoint® slides! Now, in 2021, we are well into Industry 4.0 – the era of the Internet of Things (IoT). In this era, several industries are experiencing a “digital transformation” that is shifting their business models away from selling only **hardware** (e.g., household appliances, jet engines, locomotives, turbines, compressors, motors, etc.), to selling solutions — a suite of hardware equipped with sensors and wireless communications generating valuable data, coupled with analytics **software** solutions that enable

users to monitor, control, diagnose and generally operate such hardware more efficiently (e.g., via remote diagnostics and scheduling preventative maintenance).

## The Data

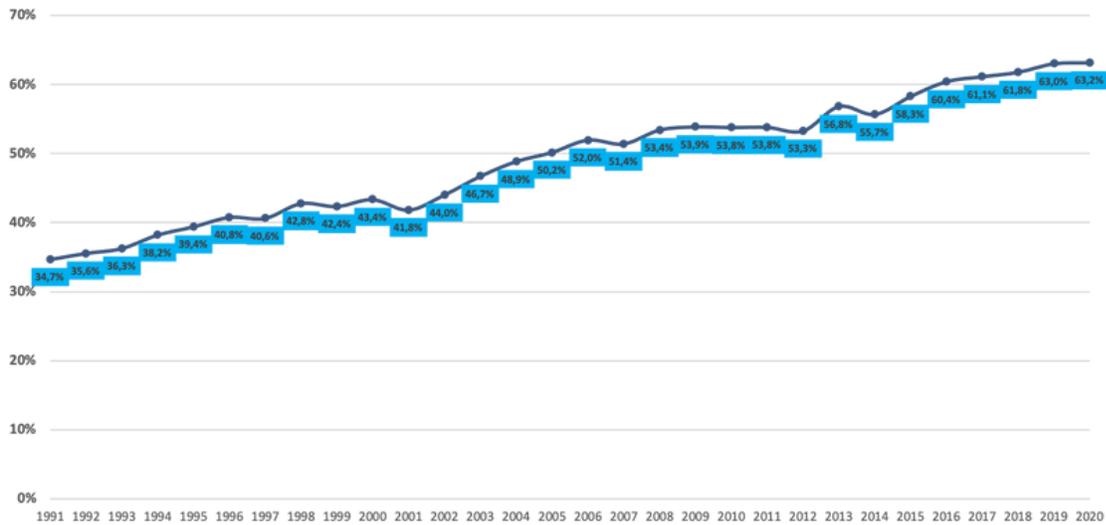
This digital transformation where software is “eating the world” is undeniable and reflected by the following facts and figures:

- The United States is the largest tech market in the world, representing 33% of the total estimated IT spend for 2021, or approximately USD1.6 trillion [[CompTIA](#)].
- In 2020, the global M&A activity in the software and Internet services space reached USD158 billion, representing over 2,790 deals [[IMAA](#)].
- Software developer is predicted to be the most in-demand job for 2021, with an annual median salary of USD107,510. [[Nasdaq](#)]
- In 2019, there were 88,633 Bachelor’s degrees, 45,667 Master’s degrees, and 2,224 Ph.D.s awarded in the U.S. in computer and information sciences [[National Center of Educational Statistics](#)].
- The IoT market is on pace to grow to over USD 2.4 trillion annually by 2027; and by 2027, there will be more than 41B IoT devices, up from about 8B in 2018 [[Business Insider](#)].
- In Q4 of 2020, U.S.-based Internet and software startups received USD17.9 billion in venture capital funding in 823 deals, representing 53% of total funding and 48% of total deals for the quarter [[PwC/CBInsights](#)].

Given these latest facts and figures, I once again sought to determine what percentage of U.S. Patent and Trademark Office (USPTO)-issued utility patents are “software-related”?

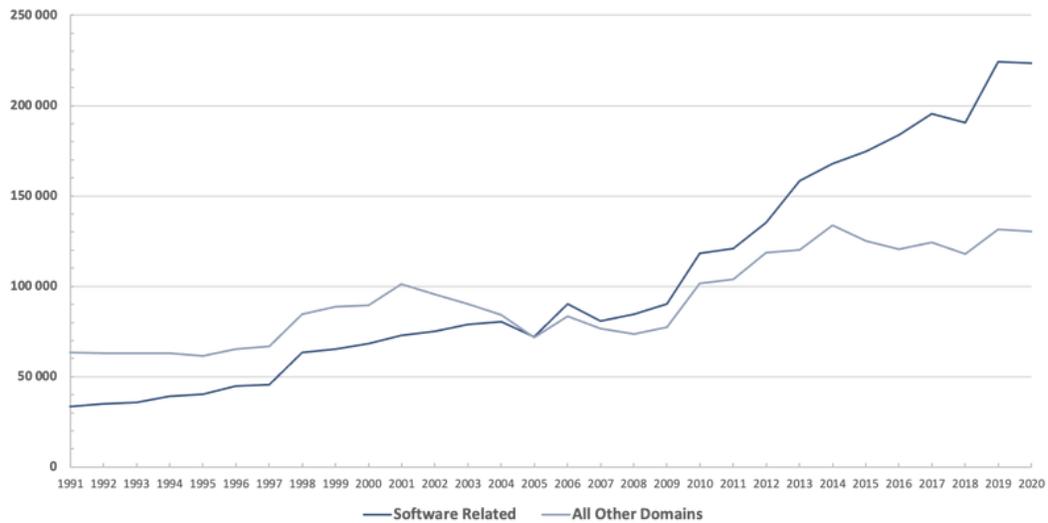
To define what patents are “software-related,” I utilized the same methodology employed by the United States Government Accountability Office in a [2013 report](#) to Congress. That report relied on certain United States Patent Classification ([USPC](#)) classes and subclasses of applications most likely to include software-related claims as selected by expert advisors to the USPTO. Now, with the assistance of IP services firm [Clairvortex](#) (and after converting data from the USPC system to the Cooperative Patent Classification ([CPC](#)) system), the data set was updated using the [PatSeer Global Patent Database](#). The results? **In 2020, 63.2% of issued U.S utility patents were “software-related” (a slight uptick from 63.0% in 2019)!**

**% Share of Software-Related U.S. Granted Patents**



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**Number of Software-Related Utility Patents Granted by the USPTO**



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Digging deeper into these numbers, I noticed an increased concentration of software patents being issued to several large players. That is, looking at the top 15 software-related U.S. granted utility patent assignees, there was a 23% increase in the total number of granted patents in 2020 when compared to 2019.

<b>Top 15 Software-Related Granted U.S. Patent Assignees for 2020</b>	
<b>Current Assignee</b>	<b>Count</b>
IBM Corp.	7891
Samsung Group	7559
LG Corp.	3332
Toyota Group	3189
Intel Corp.	2765
Canon Inc	2590
Taiwan Semiconductor Mfg. Co. Ltd	2579
Microsoft Corp	2555
Dell Technology Inc.	2497
Apple Inc.	2324
Sony Corp.	2291
BOE Technology Group Co Ltd	2000
Huawei Investment & Holding Co. Ltd.	1974
Alphabet Inc.	1921
Amazon.com Inc.	1821

## Hope for Ending the Section 101 Plague?

Meanwhile, back at the patent bar, the USPTO’s Section 101 [guidelines](#) interpreting *Alice*—and the accompanying 46 examples—have not cleared the confusion, and *Alice* continues to distract the USPTO, courts and practitioners from properly focusing on Sections 102 (novelty) and 103 (obviousness) that impact patent quality. Not surprisingly, the arrival of a new presidential administration and the start of the 117<sup>th</sup> Congress has revived the dizzying speculation about “Section 101 reform.” Will this be the year, as outgoing [USPTO Director Andrei Iancu](#) stated in his [farewell speech](#) at the U.S. Chamber of Commerce on January 19, 2021, that we “finally resolve this issue that has plagued our [patent] system for the past decade? If the courts cannot

do it, then will Congress step in with legislation and finally liberate our country from this quandary?” Well, we can only hope!

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### **THE AUTHOR**



Raymond Millien , named one of the “World’s 300 Leading IP Strategists” by Intellectual Asset Management (IAM) Magazine and a “Corporate IP STAR” by Managing IP (MIP) Magazine, is Chief IP Officer at Volvo Car Corporation and CEO of Volvo Cars Ventures. He received a B.S. in Computer Science from Columbia University (New York, USA) and a J.D. from The George Washington University Law School (Washington, DC, USA). Previously, he has led the IP function at GE Oil & Gas and the American Express Company, and the software IP function at GE Healthcare. Mr. Millien has also served as General Counsel of merchant bank Ocean Tomo, LLC, and practiced law in the Washington, DC offices of DLA Piper US LLP and Sterne, Kessler, Goldstein & Fox PLLC.