ACQUIA
EXPERIENCE DIGITAL FREEDOM

THE RISING TIDE OF
OPEN
SOURCE

CONTENTS

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Due diligence is a crucial part of any new digital project. Everyone wants to make a great choice for their teams in selecting a vendor or platform. The weight of such responsibility can often lead decision-makers to rely on conventional technologies. On the surface, this can seem like a reasonable decision. Conventional, proprietary technology offers a perceived source of ownership and accountability. And for many IT managers, knowing that a platform has worked in the past provides a sense of confidence.

However, such confidence can be deceiving. Proprietary technology can be, for lack of a better word, stagnant. In a world where technology is constantly growing and evolving, **flexibility** and **scalability** are key components in a successful digital strategy. Furthermore, so is **accountability**. While proprietary technology does come with its own dedicated development team, its source code is usually a closely guarded secret. Fortunately, **there is an alternative option for IT managers looking for all three crucial ingredients — open source technology.**

WHAT IS OPEN SOURCE TECHNOLOGY?

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Open source technology refers to code made available for public use or modification. Developers are able to use, improve and distribute this code as they see fit — without cost or restriction (most of the time). Often, open source technology is the product of collaboration by members of the development community. The best-known example of open source software is the Linux operating system. Another major example is the Firefox web browser by Mozilla. However, there are open source software products for any purpose you can imagine — databases, even machine learning.

While any code can be deemed open source, the Open Source Initiative (OSI), a non-profit corporation that promotes the use of open source software, governs the standards and official use of the Open Source Software Certification. To be OSI-certified, the developer of the code must guarantee the right for anyone around the world to freely read, redistribute, modify and use the software. Open source technology is then released under a specific license that lists the terms and conditions for using and modifying the code. Four of the most common open source licenses include the MIT License, the GNU General Public License (GPL), the Apache License, and the BSD License.

When someone makes changes to open source code and makes the new product available, the changes they made are recorded in the code. This public availability of information is an example of what many consider to be open source code's biggest strength — accountability. Since the source code has such a dedicated user base and developer community, the code is regularly improved. It's in the best interest of developers to root out bugs and improve the body of code. This is a significant difference from proprietary — or "closed" — code. Code that is privately owned does not allow users to inspect it. Many open source advocates cite the accessibility, freedom and neutrality of open source as the biggest reasons for their preference.

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WHAT IS DRUPAL?

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Drupal is an open source and widely used content management framework known for its flexibility and large, supportive developer community. Today, 1.9% of all websites are built on Drupal's PHP-based framework, including the websites for major names such as **NBC Sports**, **Blue Cross Blue Shield**, **Johnson & Johnson**, **Panasonic** and **Warner Music Group**. Drupal is released under the GNU Public License, which guarantees end users the freedom to run, modify and share the Drupal software.

The flexibility, security and accountability of Drupal's source code are widely considered to be unmatched by most proprietary software options. Furthermore, the portability of Drupal code allows a web developer to set up a rather complex environment in a relatively short period of time. Drupal developers have also authored a wealth of tools that anyone may adopt to extend Drupal's functionality relatively quickly. In fact, at the time of writing, the tools include 2,790 themes and 43,697 modules, all of which are generally available on Drupal.org.

Over time, Drupal has stayed flexible to accommodate new technologies. Drupal's capabilities have been integrated with Backbone.js, CKEditor, Guzzle, Symfony2 and Twig. Drupal's capabilities support collaborative authoring, podcasts, image galleries, peer-to-peer networking, file uploads/downloads and more. More recently, Drupal has been seamlessly extended to support applications for social media, artificial intelligence, machine learning and the internet of things (IoT). Drupal has even been used to display content on airport screens and watches.

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CASE STUDIES

Open source technology and Drupal have been a productive, reliable and game-changing solution for many organizations — public and private, large and small, tech and otherwise. Often, Drupal provides a solution for a company with a specific need to either enhance the digital experiences of their users, improve the management of their content, or both. Below are some notable examples of how the Drupal platform has positively impacted a diverse set of organizations

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MICROSERVE

One open source option that is growing in popularity is decoupled Drupal, which allows developers to utilize any technology to render a front-end experience, i.e., "the glass," where a user interacts with an application. This is in lieu of the theming and presentation layers that come with a "coupled" out-of-the-box CMS. In a decoupled Drupal architecture, the Drupal back end exposes content with other front-end systems, such as native mobile applications, conversational user interfaces (UIs), or applications built in JavaScript frameworks.

Microserve is an IT solutions company that has found great success utilizing decoupled Drupal as the best option for many clients — especially for clients seeking to centralize a wealth of data into a single place. Microserve's clients desired the flexibility to reach their customers with multiple technologies, as well as secure the ability of their brand to explore future technological avenues, such as apps. Furthermore, many of their customers found decoupled Drupal as the best way to avoid user distractions, including page reloads.

Today, 76% of constituents prefer digital interaction with governments. The state of Massachusetts website, Mass.gov, struggled for some time to provide a constituent-centric experience. For example, a student looking for information on tuition assistance on Mass.gov would have to sort through seven different government websites before finding relevant information.

The Mass.gov team discovered that 10% of their content serviced 89% of site traffic. In other words, up to 90% of the content on Mass.gov was either redundant, out-of-date or distracting. Acquia helped Mass.gov move a 15-year-old site from a legacy CMS to Drupal. As an early adopter of Drupal 8, the Commonwealth of Massachusetts decided for the code that powers Mass.gov to be open source. Everyone can see the code that make Mass.gov work, point out problems, suggest improvements or use the code for their own state.

The team at Mass.gov also incorporated user testing into every step of the redesign process, including usability, information architecture and accessibility. This approach has earned Mass.gov a score of 80.7 on the System Usability Scale, which is 12% higher than the reported average. In comparison, the former Mass.gov site averaged 32 out of 100 on a user satisfaction survey.

COMMON MYTHS ABOUT OPEN SOURCE TECHNOLOGY

Anytime a new technology or platform arrives on the scene, there will be a mixed reception. Some industry leaders will be all-in, while others will be more hesitant. The same can be said for the rest of the industry — from executives to developers to burgeoning tech students. And such hesitation will give rise to misconceptions. Some of these may be grounded in legitimate concerns about security or performance, while others seemingly arise out of fear of the unknown and misunderstanding.

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Below are some of the most common myths surrounding open source technology:

OPEN SOURCE IS LESS SECURE THAN PROPRIETARY SOFTWARE

A common misconception about open source software is that the ability to see vulnerabilities in the code leads to vulnerability. However, little truth resides within. If anything, the nature of open source software empowers developers to address security issues much more quickly than proprietary systems, of which an end user must rely on a third-party vendor or developer to address the weakness. The open source community also facilitates peer review from a diverse set of developers who are motivated by more than profit to improve the code.

OPEN SOURCE IS A FAD

It can be quite easy to label any tech trend as a fad, but open source clearly stands out among the pack. A range of studies by organizations such as Gartner have concluded that open source has staying power, and industry leaders are digging in. The Linux Foundation, for example, pioneered a survey that found more and more large technology companies are establishing and nurturing open source best practices to increase productivity. The same report found that more than half of respondents across all industries surveyed work at an organization that has an open source software program or plans to establish one; moreover, the report authors predicted that the number of enterprise companies using open source will triple by 2020.

OPEN SOURCE IS DIFFICULT TO MAINTAIN

Some of the most well-known companies in the world are run on open source software; thus, there will always be motivation to maintain and improve open source code. More importantly, open source code used to build applications can live on after the relationship with your developer has ended. There will always be independent vendors to offer support — and you do not need to wait for your proprietary vendor to address your issues. In effect, open source software may be maintained even if its developer has shifted focused, gone out of business or raised their rates.

OPEN SOURCE IS NOT READY FOR PRIMETIME

For those who may not know, tech giants like Amazon, Google, Facebook, Reddit and Twitter all proudly use open source technology. In 2018, the most significant acquisition of an open source-based company occurred, when IBM acquired Red Hat for $34 billion. In fact, open source tallied $57 billion worth of M&A and IPO value in 2018. Clearly, the industry is embracing open source.

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WHAT'S NEXT FOR OPEN SOURCE?

The future is very bright for open source. As open source becomes more widely accepted and adopted by large enterprises with the resources to invest back into the developer community, users are realizing the benefits of open source projects from some of the most innovative organizations across the globe, including Google and Facebook. For example, Google recently made two of its platforms open source: GPipe, a library for efficiently training large, deep neural networks, as well as PlaNet, an artificial intelligence (AI) agent that learns about the world from images. Additionally, Microsoft has uploaded the source code for its Windows calculator to GitHub.

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Not surprisingly, many experts expect that open source will become an integral part of artificial intelligence and machine learning. However the same holds true for big data, blockchain, cloud computing, DevOps, the IoT and blockchain, which are democratizing these technologies and fostering innovation. Open source architecture is also becoming the backbone of software for sectors as diverse as voting tabulation, supply chain management and banking.

- Market Research Engine predicts that the revenue from the open source services market will exceed $47 billion by 2024, growing at a compound annual growth rate of 22%.
- The Open Compute Project reports that servers, storage and networking are the fastest projected growth categories, while automotive and manufacturing are likely to be the fastest growing verticals.

However, as with any transformation, with more code will come a level of risk. A 2018 Synopsys OSSRA (Open Source Security and Risk Analysis) report found that 77% of IoT codebases scanned in its survey had open source components, but they contained an average of 677 vulnerabilities per application. Seventy-eight percent of the codebases audited contained at least one vulnerability. Furthermore, the number of open source vulnerabilities per codebase grew by 134% over the previous year.

These shortcomings are largely due to organizations lacking the resources or priorities to properly utilize open source code and address vulnerabilities. Thus, organizations must invest as much time and resources into open source code as proprietary code and ensure that policies and processes to inspect and improve the open source code are incorporated into the software development and maintenance cycles. Fortunately, evidence suggests that the industry may have heeded the warning — job openings for open source developers are sky-high.

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HOW DOES ACQUIA GROW WITH OPEN SOURCE?

Dries Buytaert, founder and lead developer of the Drupal content management system, as well as the founder of Acquia, [illustrates](#) the trajectory of open source technology well. "I have spent my entire professional career in open source, and believe it to be superior in many ways," he said. "Over the past 20 years, I've seen open source expand from being a software license to an innovation model and a business model disruptor."

As open source adoption grows, so does the open source digital experience solutions offered by Acquia, a brand built on Drupal, which is considered the world's most widely adopted open source web content management system for enterprises. In 2018, demand for the [Acquia Digital Experience Platform](#) propelled the company to a record year in which it surpassed $200 million in revenue, as Acquia added hundreds of new customers, including more than 325 enterprise customers.

Overall new subscription bookings grew 33% year over year, with strong demand across enterprise, midmarket, public, education and nonprofit sectors. New subscription customers include Tata Steel, Rodan & Fields, Fannie Mae, the Office of Justice Programs, the U.S. Postal Service, Fiji Airways, Friesland Campina, Sanofi Genzyme, the Make-A-Wish Foundation and DraftKings. The company grew its R&D team by 45% in 2018 to accelerate the development of its suite of marketing and digital experience applications. Upon entering 2019, Acquia has a workforce of nearly 900.

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DRUPAL: DURABLE DESIGN FOR CLOUD COMPUTING

In addition to flexibility, scalability and accountability, open source technology enables organizations to grow with a community. This is a strength that can't quite be quantified. Under Buytaert's vision, the Drupal developer community is second to none in that regard. Drupal developers believe that the collective effort of a global community will deliver more and better code as well as more expansive, creative approaches than that offered by a small team that would likely approach problems from the same angle.

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"Today, technology is becoming more and more complex and the rate of change is accelerating. It is becoming increasingly difficult for any one organization to build an entire solution and do it well. By contributing back and by working together, these organizations can keep a competitive edge over those that don't use open source and collaborate," writes Buytaert. "What looks strange to some, is actually perfectly logical to others. Those that contribute to open source are engaging in a virtuous cycle that benefits their own projects. It is a tide that raises all boats; a model that allows progress to accelerate due to wider exposure and public input."

This philosophy is very much in keeping with the origins of the internet itself, which was meant to be the product of collaboration. The modern internet of today comprises countless diverse applications, machines, programming languages and users — a grassroots effort if there ever was one. Furthermore, the internet is continuously evolving, both in look and feel as well as in ability and performance. Technologies such as Drupal, and especially decoupled Drupal, are designed not only to follow in these same footsteps but to keep up with the changing demands of enterprise users and the function of the internet.

It's no surprise that Acquia's cloud computing platform, built to power Drupal applications, allows organizations to build, manage and activate ambitious digital experiences at scale. This is why thousands of organizations globally rely on Acquia to power customer experiences across any channel. With Acquia, customers gain one foundation and a native cloud platform that enables IT, marketing and commerce teams to build and deliver swiftly the applications to create a digital experience with content their users demand — now and in the future.

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ABOUT ACQUIA

Acquia is the open source digital experience company. We provide the world's most ambitious brands with technology that allows them to embrace innovation and create customer moments that matter. At Acquia, we believe in the power of community — giving our customers the freedom to build tomorrow on their terms.

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