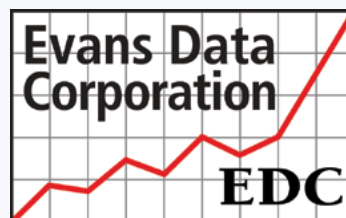


DeveloperMedia User Survey

March 2021



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Introduction

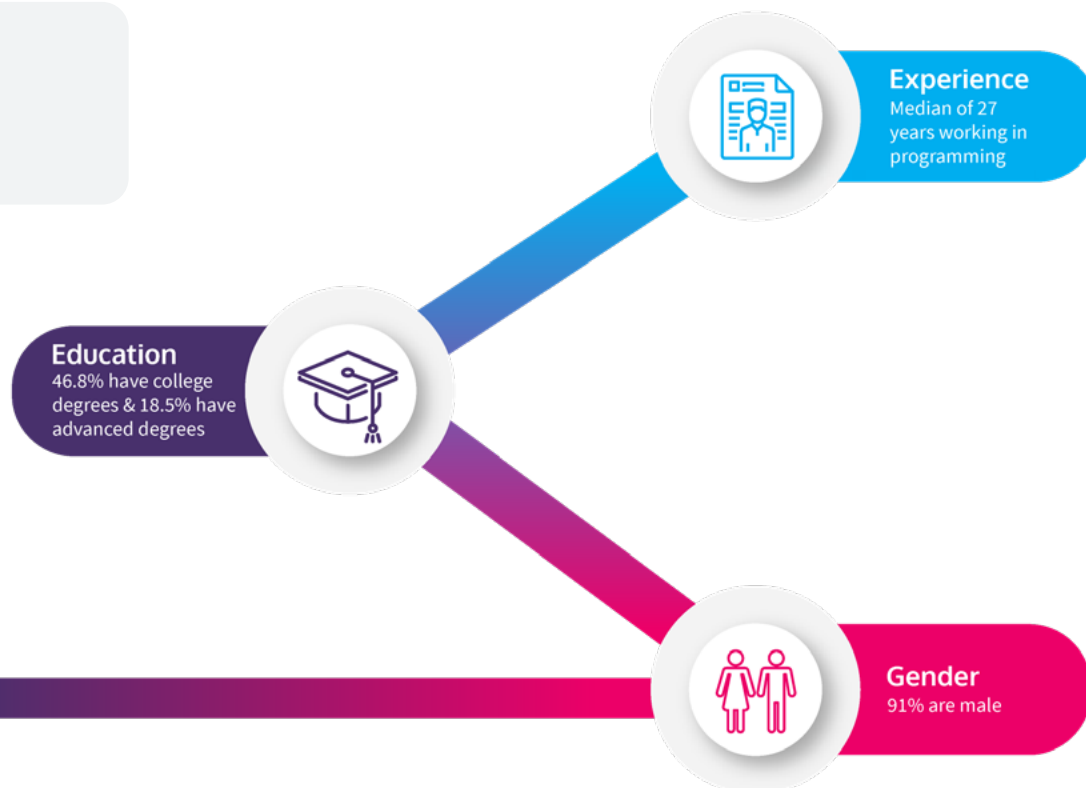
For 20 years, Evans Data has conducted primary research on developers and IT professionals. We produce 12 different syndicated studies each year, with different surveys fielded every month. In addition, we work with clients, providing them with custom surveys. Throughout the years, we've become highly aware of the characteristics of various types of developers, their technology adoption trends, and the dynamics that shape their actions and intentions.

In the fall of 2020, DeveloperMedia commissioned Evans Data Corp to conduct a survey of their audience. The objective was to build a clear understanding of the profile of DeveloperMedia readers by identifying the different work they are involved in and their unique characteristics.

This is the fourth annual user survey that Evans Data has conducted for DeveloperMedia, and while we see many similarities from last year, there are changes as well. The year 2020 was surprising for everyone, and it forced many changes in the way we work, live and communicate with each other. This is true for developers as well as everyone else.



Who Are They?

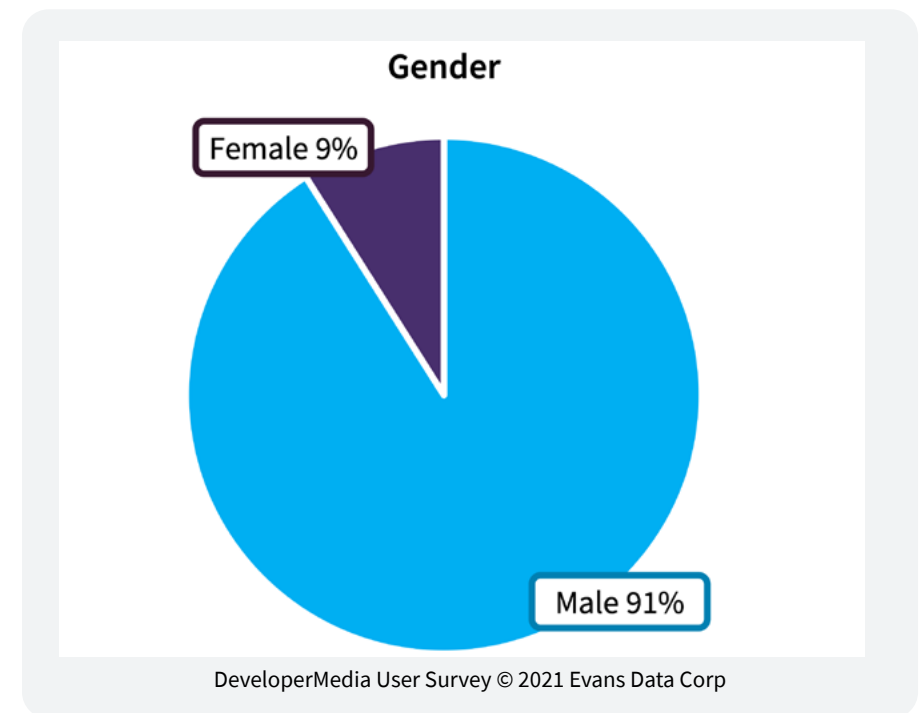


People develop software for many reasons. Of course, the developers we are most familiar with are professional software developers who make their living from coding or managing others who do, but there are also people who write software as a hobby and there are those in academia who are earning or teaching computer science. By far the largest plurality of

DeveloperMedia users are professional software developers, though a little more than 10% are hobbyists. Several companies are coming out with low-code tools that help developers do their job faster and create apps in the hopes of expanding this potentially large market.

Gender

The vast majority of DeveloperMedia users are male. There are only 9% female users, but this is almost double the percentage that were female in our 2019 DeveloperMedia user survey. As more companies promote women in STEM careers and a scientific academic trajectory, we can expect this number to increase.

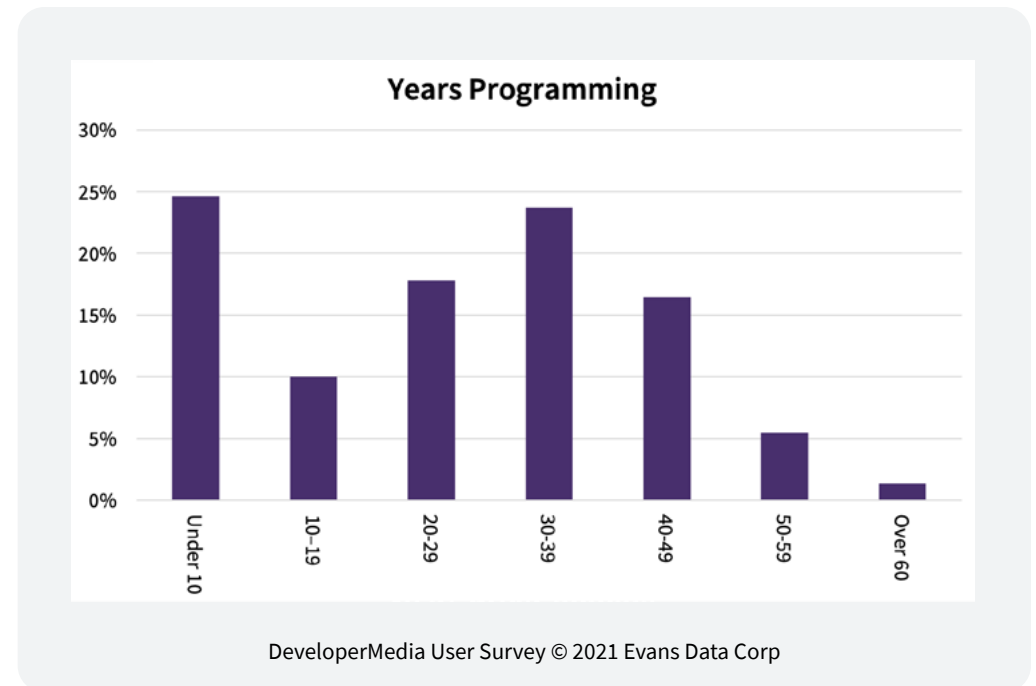


Experience

There is a strong correlation between the length of time programming and level of influence within their organization.

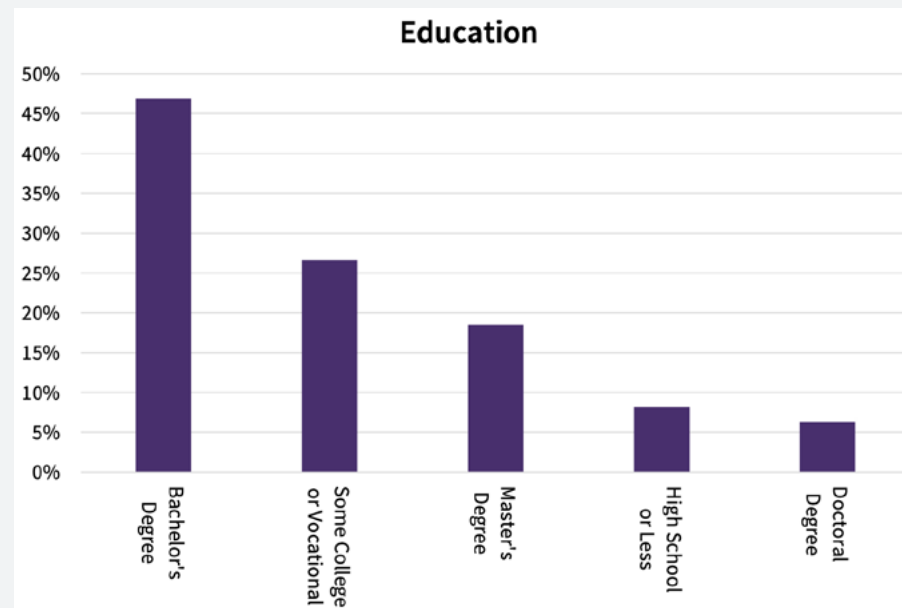
DeveloperMedia users have a good spread from just getting started to being long-accomplished programming rock stars. Over 40% have 20 or more years of programming experience, and almost 40% have less than 20 years of experience.

Regardless of experience, developers are lifelong learners and continually interested in new technologies and new tools to help them do their jobs more efficiently.



Education

These developers are also well educated. The vast majority have attended college and two-thirds have a degree—most often in computer science or math.



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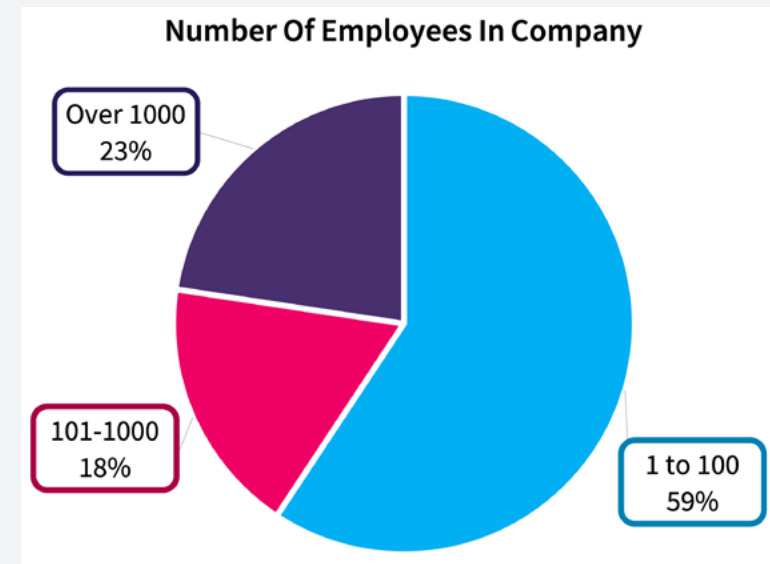
Their Workplaces



Where Do They Work?

Software development is a vital part of almost every industry today, even those that are focused on widely divergent services or products. Software forms the nervous system for all modern infrastructure across industries and across company sizes, from the largest to the smallest and everywhere in between.

The pie chart to the right shows the company sizes of DeveloperMedia users and shows a preponderance of developers from companies that are usually categorized as small or medium sized businesses (SMBs). SMBs are a sweet spot for many development tool vendors as well as service companies.

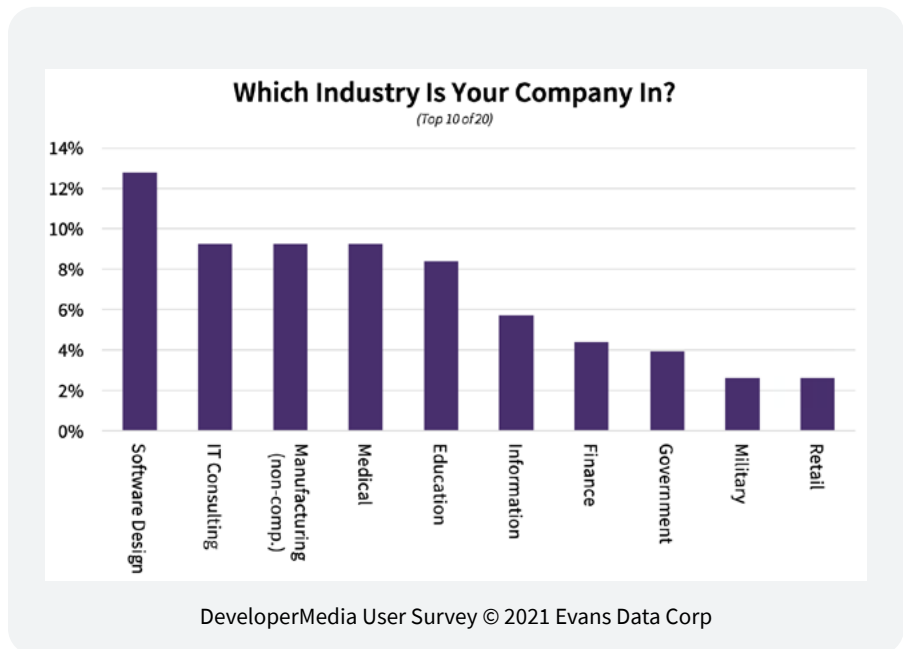


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Their Industries

While developers work on applications for many different types of implementations, they also work across industries. Almost every type of business needs software, and thus needs developers.

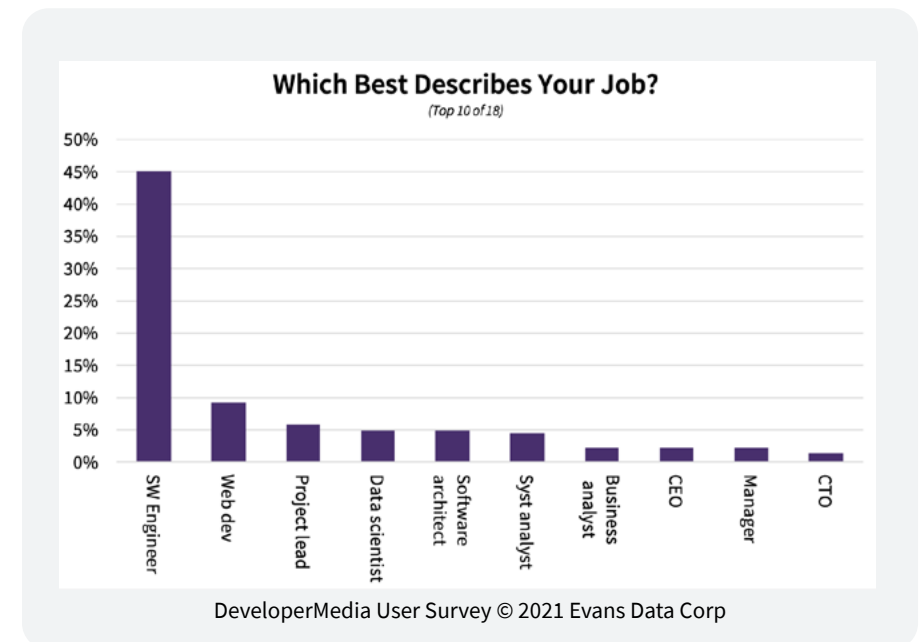
Roles could range from a combo front-end to back-end development or DevOps role in a small company of five, to a departmental workgroup developer in an unrelated industry to a CTO of a major software company. As we see in the graph, developers are most likely to work in the software industry, even though software development itself spans many industries.



Job Titles

When it comes to job titles, software engineer is by far the most common amongst DeveloperMedia users. This shows a targeted audience that is open to direct messages crafted to create interest among developers focused on software engineering before anything else.

At the same time, there is a nice mix amongst the other members of the modern software development and DevOps teams.



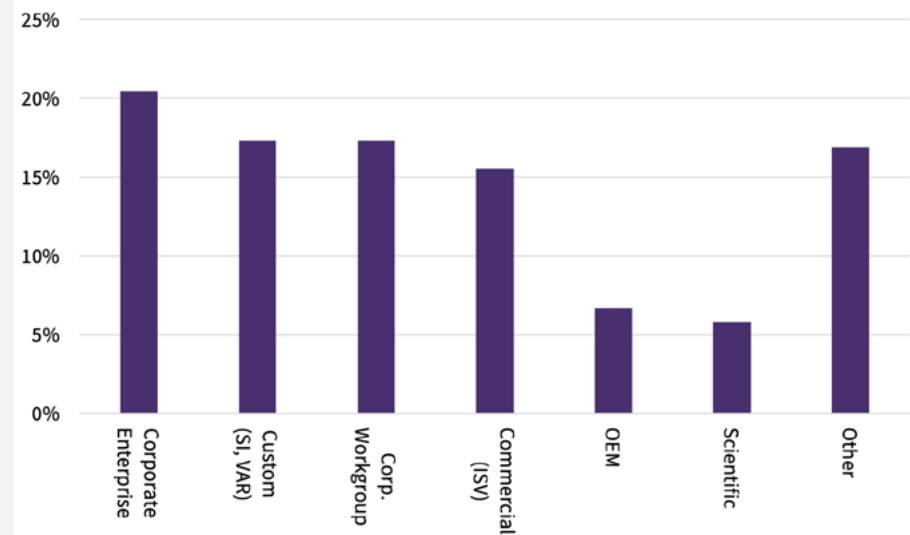
Type of Work

While developers may work for different types of companies in a variety of industries, the decisions developers make about the tools they use and the technologies they support are often influenced by the type of work they primarily do, or the types of applications they create.

Asked to identify what type of software they work on, most DeveloperMedia readers indicated that they work either as internal developers working on apps for use in their enterprises, or as systems integrators or VARs working on custom apps for clients outside their companies.

The table below shows the distribution of developers across these developer segments. DeveloperMedia users are reflective of developers in general.

Which Best Describes The Type of Applications You Work On Most Often?

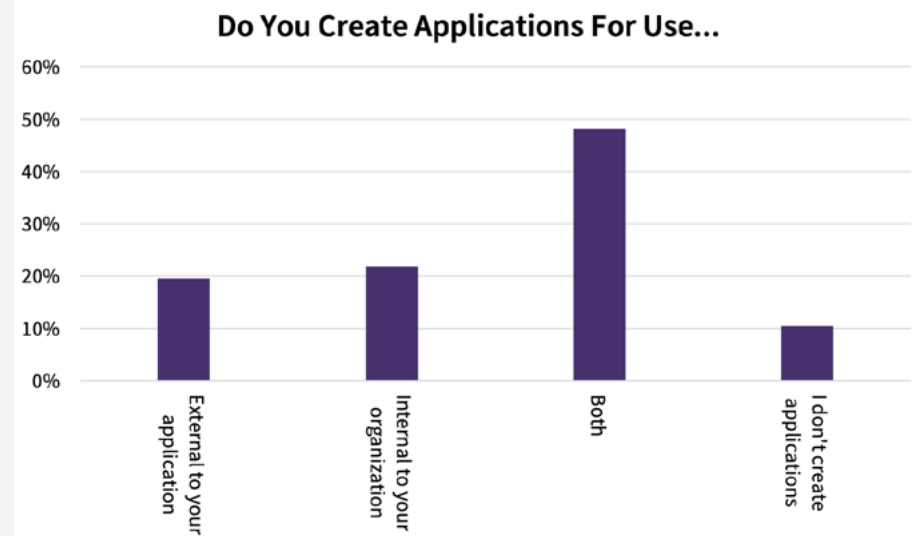


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Internal or External Apps

While the chart above shows types of apps being developed, the chart to the right shows specifically whether those apps are being designed for internal or external use.

Those who said they write apps for internal use (22%) are statistically tied with those who write apps for external use only (20%). Ten percent of DeveloperMedia users don't write apps and most likely fit into one of the "supporting" job categories that we saw earlier in the job descriptions.

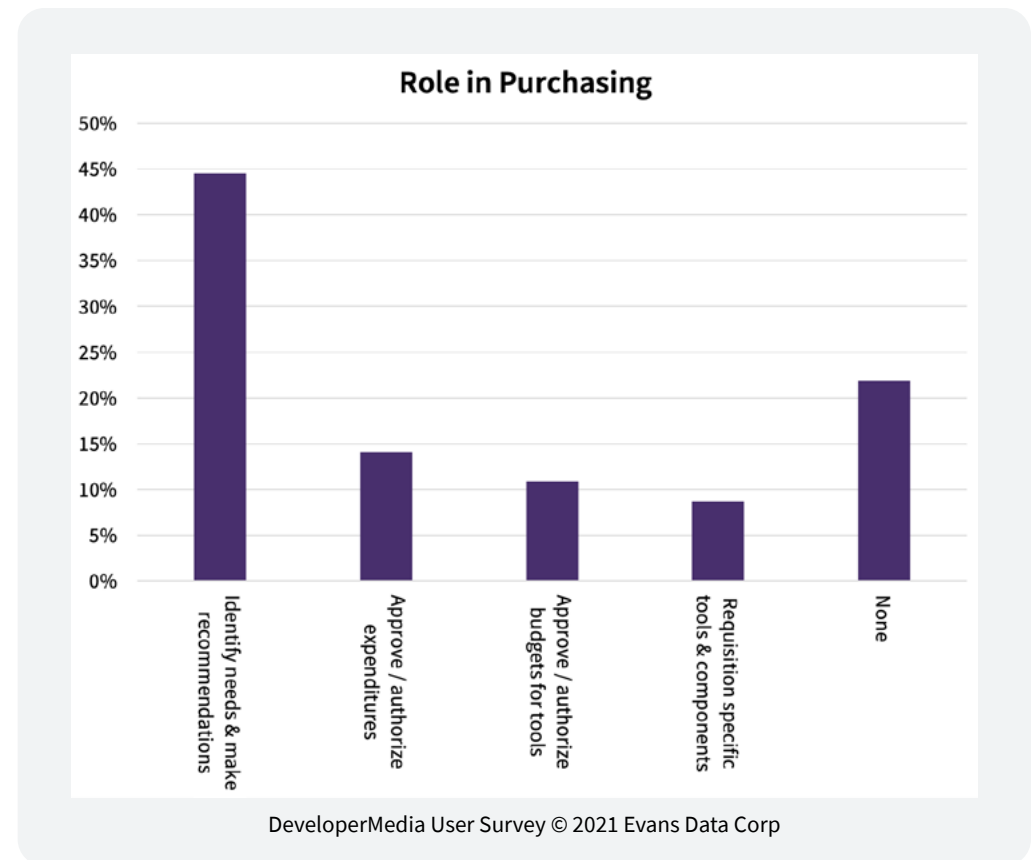


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They Influence Purchases

Developers are highly influential in the workplace. Within the workplace, after all, who better to know which tools to use but those who will use them? Developers are highly opinionated about technologies they use because they are pragmatic people who care about getting things done as efficiently and successfully as possible. For this reason, many are highly selective about the tools and technologies they choose to use or support.

Most developers will say that they influence the selection and purchasing of technologies. DeveloperMedia readers are no different. 45% of DeveloperMedia readers identify needs and make recommendations within their respective organizations. But not all DeveloperMedia readers have purchasing authority. Fourteen percent can authorize expenditures, while another 11% approve or authorize budgets for tools. While not all DeveloperMedia readers have purchasing authority, most developers can kill a deal in a hot second.



Other studies have shown that developers influence much more than just the tools they use. They also influence or make decisions about which Cloud services to use, and they make recommendations on other technical resources in use in their organizations, such as servers, security, low-code platforms, Monitoring/Observability tools, AI, testing collaboration, DevOps, Open Source tools and more. Developers are more tech savvy than most other people and are viewed as authorities on most technical products and services.

Which best describes your involvement with purchasing of tools or components for your development or operations efforts?	
Identify needs and make recommendations	44.5%
Approve / authorize expenditures	14.1%
Approve / authorize expenditures	10.9%
Requisition specific tools and components	8.6%
None	21.8%
Total	100.0%

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Language and Technology Use

DeveloperMedia developers use a wide range of languages in their work. Developers know that some languages are better suited to some applications than others, and many will not exclusively use just one language.

DeveloperMedia developers most commonly use C#, with 66% indicating its use. JavaScript is also frequently used, as revealed by 52% of DeveloperMedia readers. Since last year, the percent using Python has grown by eleven points and is now used by 38% of DeveloperMedia developers.

Which of the following languages do you use?	Count	% of Cases
C#	147	65.6%
JavaScript	116	51.8%
C / C++	94	42.0%
Python	85	37.9%
Java	52	23.2%
PHP	39	17.4%
Perl	13	5.8%
Objective-C or Swift	9	4.0%
Ruby	6	2.7%
Other	110	49.1%

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Looking to the Future

The next big thing is always on the minds of developers and their companies. Many are already involved in cutting-edge of new technologies. Developers are, after all, first adopters and promoters of the technologies that change the face of our industry. In a way, developers can be looked at as barometers for the larger technology landscape, as what they do today may very well be a foreshadowing of what is to come for technology in general.

DeveloperMedia readers are no different. What they're into now reveals the prominence and importance of data analytics in the near future, along with artificial intelligence and machine learning.

What are your plans for working with the following in your development?	Currently using	Plan to use within next year	Plan to use after one year	No plans
Big Data	26.7%	16.6%	8.8%	47.9%
Artificial Intelligence	17.9%	18.3%	15.1%	48.6%
Machine Learning	15.1%	17.0%	14.7%	53.2%
Virtual Reality	4.2%	9.3%	10.6%	75.9%
Augmented Reality	3.2%	9.6%	11.4%	75.8%

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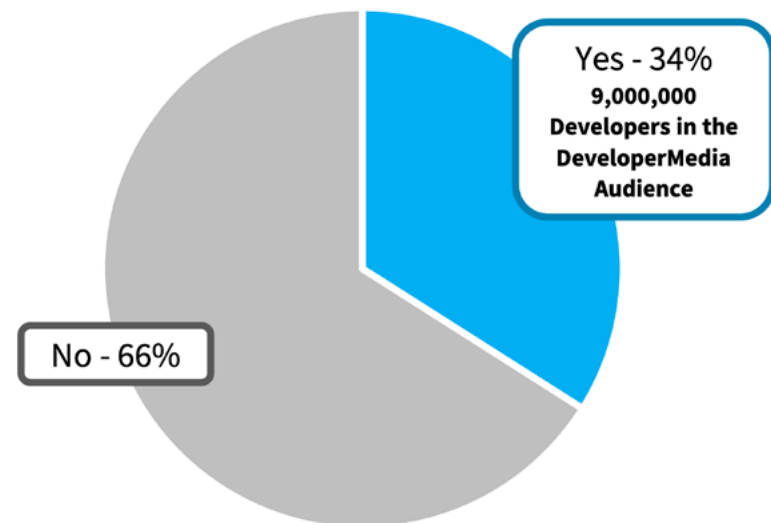
Many Write Mobile Apps

Mobile application development was once a novelty. However, that has changed. Now most apps are expected to be mobile aware and to adapt to the form factor of the client device. Consequently, the notion of a “mobile developer” is shifting out of fashion.

Mobile platforms have become as widespread as desktop operating systems. In many cases, companies have adopted “mobile first” development policies, where mobile devices are primarily targeted as the premier deployment platforms for applications.

While mobile apps continue to make up a large portion of development work, the majority of developers do not consider themselves primarily “mobile developers.” Mobile elements are now expected to be incorporated in almost all apps today, and for this reason, the boundary between mobile development and non-mobile development is no longer clear-cut. Presently, 40% of DeveloperMedia readers work on mobile apps.

Are you developing any Mobile Applications or have you developed any in the last two years?



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Mobile Development Approach

Mobile apps can be written to run on the device's native operating system or in a web-based runtime. In the past, the web-based approach was favored by more developers because of the cross-platform compatibility assured by that approach.

However, writing directly to the native OS allows the app to take advantage of unique features built into the device and also provides for enhanced performance. Today, only 31% write exclusively for a web-based runtime, while almost half write exclusively for native operating systems. The rest write hybrid apps that run partially in a runtime and partially native.

Which of the following approaches do you use most for mobile apps?	Count	% of Cases
Written to the native device's OS	35	46.7%
Written with a hybrid approach (part web runtime, part native code)	29	38.7%
Written in a web runtime	23	30.7%

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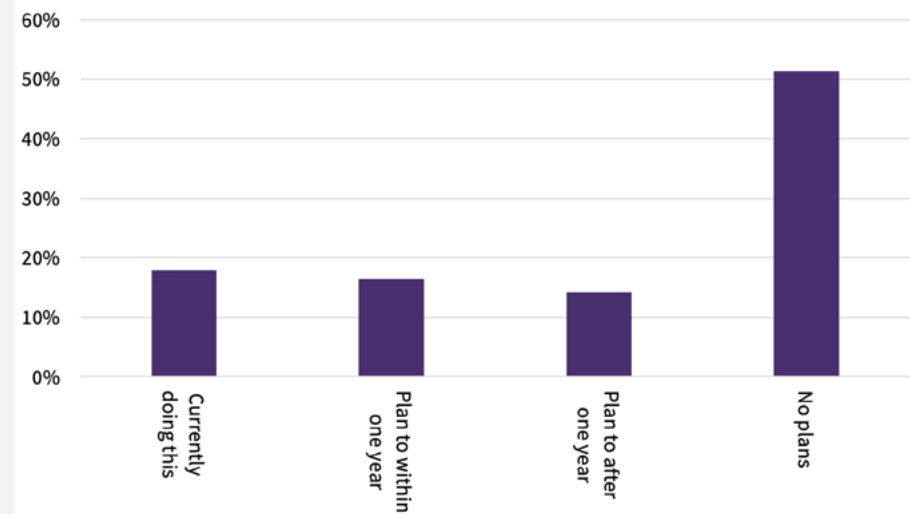
Plans for Developing the Internet of Things

The Internet of Things burst on the scene as a concept just a few years ago, but most of what was new was the name. Progress in connecting all the various facets of our world has been ongoing for years and continues to evolve in new ways.

Developers continue to be motivated by the greater interconnectivity promised by the Internet of Things. IoT applications allow developers to process contextual information in real time, making apps that are smarter and more responsive to real-world conditions. Eighteen percent of DeveloperMedia readers are presently involved in IoT, while another 16% expect to be within the coming year.

For the past few years, the types of IoT applications that DeveloperMedia readers consistently work on the most are commercial consumer apps. This is a broad category and can include many different types of applications, including those that bring smart functionality to the general public. Smart devices can now be seen in homes, in cars, and as wearables.

What Are Your Plans For Developing Applications for Internet of Things?

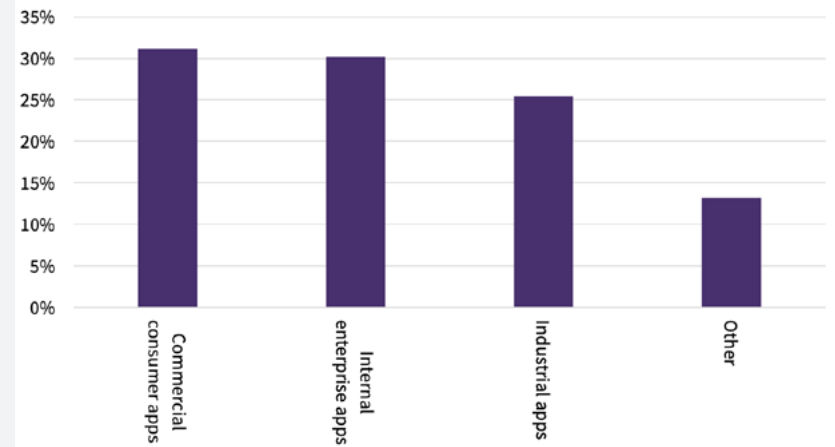


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Types of IoT Apps Developed

Of course, as the Internet of Things permeates more and more of our lives, it is spread across many situations. Some developers will work on industrial IoT while others will target consumers or internal enterprise apps. Here we see a fairly even break across the various types. We should understand that there may be some overlap in the category called industrial apps and the two that identify apps for either internal or external commercial apps.

What Type of Applications Will Your Internet of Things Apps Be?



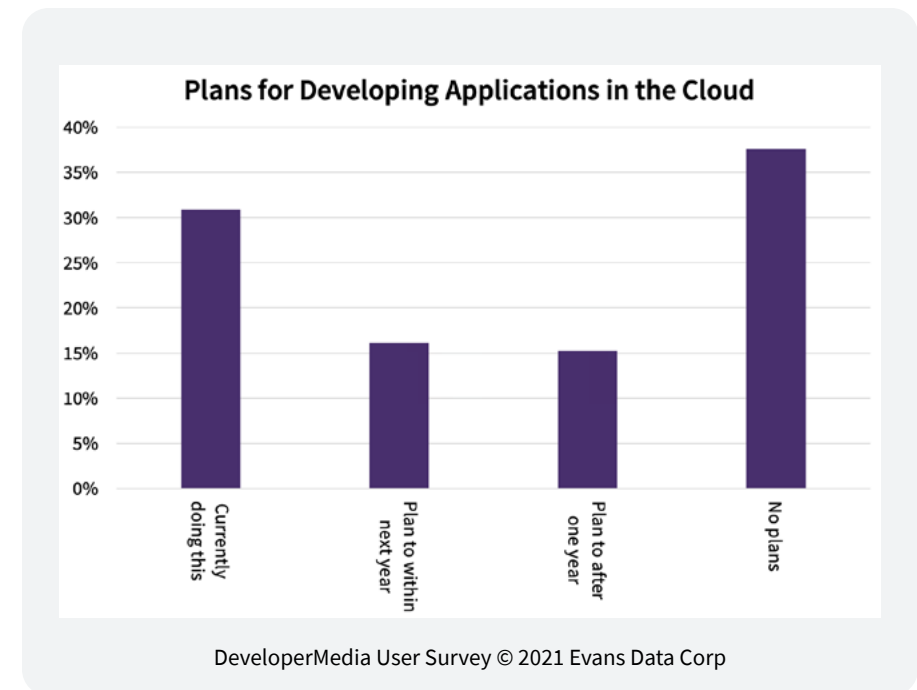
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Cloud Development

Cloud development has changed the way developers and DevOps teams work and in the last ten years. It is a well established technology now.

And Cloud development is not a new concept to DeveloperMedia readers. It continues to be a staple of many of the developers' work. Cloud platforms allow organizations to reduce IT costs, add capabilities on a virtual basis that do not have to be created on-premises, and allows organizations to scale rapidly and more efficiently.

Cloud platforms can also be launching pads for many modern applications that involve the processing of large amounts of data at a very high rate. It is not surprising that when developers are working on artificial intelligence, on the Internet of Things, or with blockchain databases, they, with few exceptions, also have to work with or on the Cloud. Almost two-thirds of the DeveloperMedia audience either is currently using the Cloud or has the expectation of doing so within the coming year.



Types of Cloud Used

While many developers and consumers think first about public clouds when the subject comes up, private clouds were once much more popular in the corporate enterprise. However, as security standards and reliability have improved, the advantages of one sort of Cloud over another have largely disappeared.

Security is still an important issue, but one that is not considered as problematic as in the past. Today, 73% of DeveloperMedia readers either are currently or have plans to use a private cloud, while 79% are either using or planning to use a public cloud.

What are your plans for using the following Cloud types?	Currently using	Plan to use within next year	Plan to use after one year	No plans
Private Cloud	43.0%	17.8%	12.6%	26.7%
Public Cloud	42.4%	18.2%	18.2%	21.2%
Hybrid Cloud	19.8%	18.3%	13.5%	48.4%

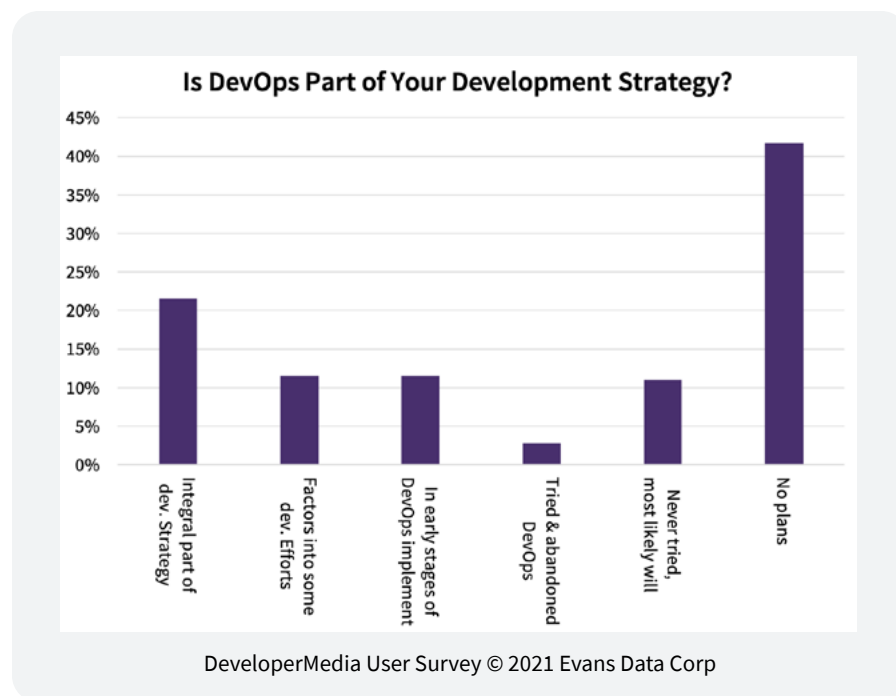
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DevOps is a Growing Movement

Organizations are continually looking for ways to speed up work processes and deploy, manage and provision infrastructure and applications more efficiently. DevOps practices allow developers to more directly engage with the IT infrastructures and architectures, and allow IT professionals to work with infrastructure as virtually assigned resources, treating them as they would applications.

These practices are generally still found in larger companies, but the general principles apply across the board. DevOps engineers work with both the IT staff and developers to oversee the code releases. Because of their work overlap, many of the DevOps people tend to have a background in scripting and coding and then show an interest in deployment and network operations, setting them up on a path to become DevOps engineers.

The chart on this page shows just over 55% of DeveloperMedia readers have in some way factored DevOps into their processes, either as an integral part of their systems or currently in the early stages of implementation.



Personal Involvement in DevOps

There are many aspects of DevOps that developers can engage in, and this table highlights the different roles within DevOps implementations. The DeveloperMedia readers that work with their companies' DevOps implementations are primarily involved with the development side.

Over 81% are personally involved with development for DevOps. Another 49% of DeveloperMedia readers who presently work in organizations that employ DevOps are working with the deployment aspects of their DevOps work.

What part(s) do you personally play in your company's DevOps implementations?	Count	% of Cases
Development	83	81.4%
Deployment	50	49.0%
Testing	49	48.0%
Build	49	48.0%
Requirements management	33	32.4%
Security	29	28.4%
Asset management	18	17.6%
Cloud Provisioning	17	16.7%
Other	11	10.8%

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What Developers Need to Learn

This question asked DeveloperMedia users to identify areas where they feel they would like to acquire skills and knowledge for their development efforts in the future. This was a multiple-response question and developers could select as many as they wished.

AI and machine learning were the most frequently selected as they have become very ingrained in software development today. These are being incorporated in all kinds of applications, and developers are correct in thinking they should be adept in AI and ML in order to be competitive in the future.

New languages and security are also top concerns today. They are must-haves in any type of software development. Note that quantum computing, while usually one of the top technologies identified by developers for the future, has few developers that currently feel they'll learn the fundamentals this year. That will come later.

What do you need to learn in the next year to execute your job effectively?	Count	% of Cases
AI and/or Machine Learning frameworks	87	39.9%
New data languages (R, Python etc.)	77	35.3%
Security	70	32.1%
IoT technologies	61	28.0%
Performance optimization	59	27.1%
System design	50	22.9%
Containerization and microservices	49	22.5%
Kubernetes	37	17.0%
Sensor technology	35	16.1%
Smart home technologies	29	13.3%
Virtualization	25	11.5%
Edge computing	17	7.8%
Blockchains and distributed ledgers	17	7.8%
Skills for Home Virtual Assistants	16	7.3%
Augmented and extended reality	15	6.9%
Quantum computing	12	5.5%
Other	57	26.1%

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In Summary

DeveloperMedia developers represent a wide-ranging audience with a broad reach into various technologies and cutting-edge development.

They are responsive, well-educated and very experienced professionals. They are keen to improve on their development skills, adopting technologies that they know can make them successful, and they do not shy away from picking up emerging technologies.