

DEVELOPER ECONOMICS

STATE OF THE DEVELOPER NATION Q3 2014



Based on a survey of 10,000+ app developers



Tracking the latest developer experiences across platforms, revenues, apps, tools, segments and regions.

About VisionMobile™

VisionMobile™ is the leading research company on the apps economy and mobile business models. Our research helps clients track app developer trends and master mobile business models.

Developer Economics is our semi-annual industry research series, tracking app developer trends, attitudes, experiences and monetization by region.

Our mantra: distilling market noise into market sense.

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About Developer Economics

Welcome to the State of the Developer Nation Q3 2014, the 7th edition of Developer Economics - the leading research program on mobile developers and the app economy, tracking developer experiences across platforms, revenues, apps, tools, APIs, segments and regions. The Developer Economics program investigates the latest trends in mobile development via developer surveys reaching up to 10,000 app developers in over 130 countries, 6 times a year.

This is the 7th edition Developer Economics: State of the Developer Nation report and presents the key findings from the largest, most global developer survey to date with over 10,000 respondents from 137 countries. This research report delves into the key mobile development trends, as identified in our survey, and discusses platform consolidation, languages, consumer vs. enterprise revenues, developer tools, segments and more!

The report focuses on eight major themes – each comes with its own infographic:

1. Platform wars go local - Global vs. regional Mindshare
2. Language ranking - Most popular vs. most actively used programming languages
3. Language lock-in - Language mix for Android, iOS, Windows Phone, BlackBerry
4. App monetization - App revenues globally, Android vs. iOS, app revenue split
5. Consumer vs. enterprise - Revenues for developers targeting consumers vs. enterprises
6. Game developers - Revenues for mobile game developers, top platforms and tools

7. Developer tools - Revenues of developers using tools, top tool categories
8. Developer segments - Characteristics, sizes and revenues for all 8 developer segments

We hope you'll enjoy this report and find the insights useful!

If you have any questions or comments or are looking for additional data, you can get in touch at matos@visionmobile.com. You can also find an online version of our report at www.DeveloperEconomics.com/go

Mark, Christina, Matos, AndreasP, AndreasC, Dimitris, Vanessa, Chris, Alex, Nick, Michael and Stijn at VisionMobile.

Thank you

We'd like to thank everyone who helped us reach an unprecedented number of respondents for our survey, and create this report:

Our Marketing and Research Partners – Digia, Intel, Microsoft, Mozilla and Nokia.

Our Regional and Media Partners, who are too many to number here – you know who you are!

Also, the developers and mobile insiders that took the time and interest to share their experiences with us.

COMPANIES WHO CONTRIBUTED TO THIS RESEARCH

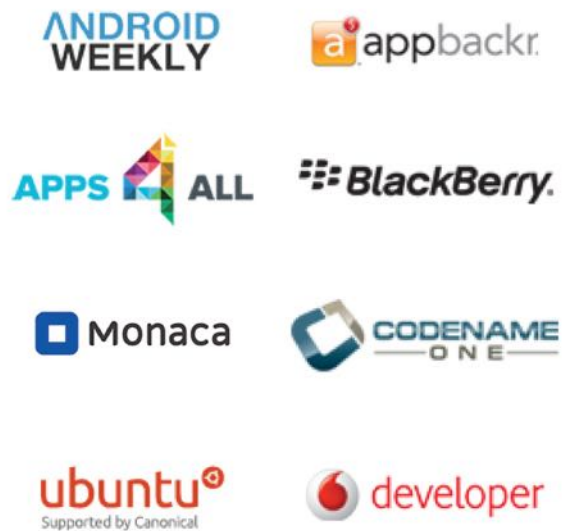
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KEY TAKEAWAYS

The 7th Developer Economics survey has once again broken all records, including responses from more than 10,000 app developers and 137 countries. This State of the Developer Nation report brings you the most important findings from the survey, showcasing the latest trends in the platforms, languages and tools that app developers are using and how much money they're making. We also take a deep dive into both enterprise and games developers.

Platform Wars

On a global level, the platform wars are ending with iOS claiming the majority of the high-end device market and Android winning almost everywhere else. Windows Phone continues to gain developer mindshare steadily at 28%, although the users have not followed.

At a local level there are still many countries, including China, India and most of South America, where the battle for developers and users continues. Apple needs local developer support for differentiation at the high end and Windows Phone is attempting to gain a foothold against Android with first time smartphone buyers at the low end.

Developer attention is consolidating around fewer platforms. The average number of platforms a developer targets has fallen from 2.9 to 2.2 over the last 12 months.

BlackBerry 10 is rapidly leaking developer mindshare, down to 11%, having failed to gain traction with consumers.

The future of HTML5 is beyond the browser. Although HTML5 is used by 42% of developers as a technology for app development, only 15% still target mobile browsers as a distribution platform.

Development Languages

HTML5 is the most widely used technology at 42% of developers with Java, the native language on Android, the next most popular at 38%. However, if we look at the primary languages developers use when creating their apps, Java takes the top spot at 26% with Objective-C for iOS in second at 17%.

C# remains popular with 14% of developers using it as their primary language, suggesting that Microsoft still has an opportunity to be a major force in mobile development, even if they don't control the mobile OS layer.

A surprisingly high 47% of iOS developers and 42% of Android developers are using something other than the native language on their platforms.

Hybrid apps are the most popular non-native option for building Android and iOS apps, used by 13% of developers. Hybrid apps are HTML5 apps with a native wrapper, typically created by tools such as Cordova.

While 63% of Windows Phone developers are using Microsoft's C#, there are almost as many C# developers on Android and iOS

combined. This suggests Microsoft should increase their focus on common tooling for mobile developers across platforms.

App Revenues

The majority of app businesses are not sustainable at current revenue levels. 50% of iOS developers and 64% of Android developers are below the ‘app poverty line’ of \$500 per app per month.

24% of developers interested in making money earn nothing at all. A further 23% make less than \$100 per app per month.

The overall app economy, including all revenue sources not just the app stores, is still growing but the revenues are highly concentrated. At the top end of the revenue scale there are just 1.6% of developers with apps earning more than \$500k per month, collectively they earn multiples of the other 98.4% combined.

Enterprise Developers

67% of mobile app developers primarily target consumers and 11% target professionals directly. The 16% of developers who target enterprises are twice as likely to be earning over \$5k per app per month and almost 3 times as likely to earn more than \$25k per app per month.

Currently iOS appears to be winning the battle for enterprise adoption and revenues. Yet many developers are focusing on the wrong platform with 10% more enterprise developers targeting Android than iOS.

Although enterprise apps have been a historical strength for them, Microsoft and BlackBerry are seeing very weak adoption for their new platforms amongst enterprise developers due to lack of demand from enterprises.

Games Developers

Games dominate app store revenues, yet most games developers struggle. 33% of developers make games but 57% of those games make less than \$500 per month. Experience wins, the more games a developer has shipped the more likely they are to be financially successful. However, 70% of games developers have shipped less than 4 titles.

Games is a multi-platform world with the average games developer targeting 3 platforms versus 1.75 platforms for non-games developers.

Multi-platform games benefit from cross-platform game development tools with Unity by far the most popular, used by 47% of game developers. The next paid tool, Adobe Air, comes a distant second at 15%.

Tools of the Trade

Third party tools are a critical part of successful app businesses. There’s a strong correlation between tool use and revenues, the more tools a developer uses, the more money they make. Despite this tool use is declining, partly due to the rapid influx of new mobile developers. 26% of developers that are interested in making money don’t use any third party tools.

The most popular category of tool is Ad Networks, with 30% of developers using them. However, this is one of the few tool categories that is not associated with higher than average revenues.

More experienced and successful developers show a preference for Cloud Computing platforms, with 40% of those with 6+ years experience in mobile apps adopting them.

looking for regional data?

DEVELOPER ECONOMICS

NORTH AMERICAN APP DEVELOPER TRENDS 2014

A research report with trends on platforms, dev tools and app revenues in North America



This research report explores the latest trends on platform mindshare, programming languages, dev tool categories, app revenue distributions, developer demographics and segmentation, enterprise vs. consumer revenues, as well as platforms, tools and revenues used by game developers in North America.

www.vmob.me/DE14NA

1 THE PLATFORM WARS GO LOCAL

The Android and iOS duopoly commands the attention of both developers and consumers and remains firmly established. However, the platform wars are not over.

On a global level Microsoft is still fighting to build a sustainable third ecosystem and making some headway with developers, 28% of whom now adopt the platform, despite failing to make significant device market share gains. The mobile computing market is so much bigger than any before it, that even a tiny share of the market represents an installed base that is too large for developers with global ambitions to ignore. Apps aiming for maximum reach with an advertising-supported business model, or social apps depending on network effects target any platform with the potential for tens of millions of users. At the same time, these global apps are now a table stake for new platforms. A platform without WhatsApp or Instagram, for example, will struggle to gain acceptance in many countries.

Developer attention consolidates

The problem for any platform wanting to challenge the duopoly appears at a regional or local level. This is also the level at which the battle between Android and iOS continues. With global apps available on all platforms, the strongest differentiator becomes the niche and local apps. In order to compete with their peers, these smaller developers increasingly choose to focus on fewer platforms.

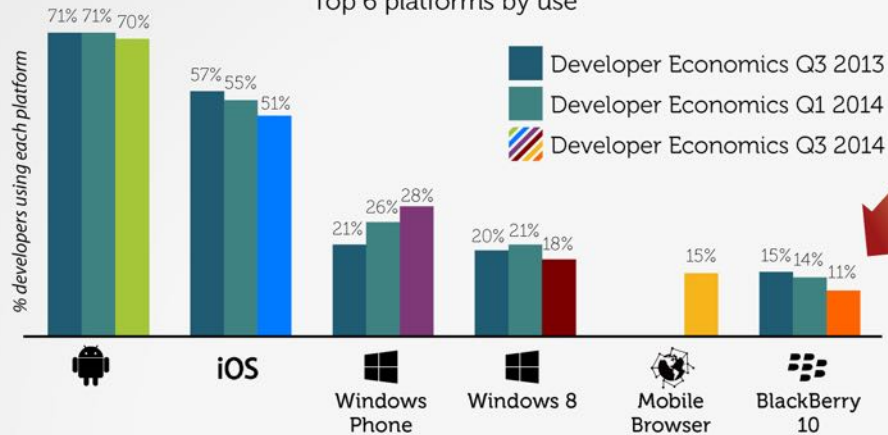
The average number of platforms a developer targets has fallen from 2.9 a year ago, through 2.5 in our Q1 report to 2.2 in this survey. If we exclude games developers (see chapter 6) the average number of platforms targeted is just 1.75 with 43% of those only targeting 1 platform. Developer mindshare for iOS is down slightly over the last 6 months but this is not fewer developers making the platform their primary target, just fewer choosing to support both Android and iOS. In most local markets developer mindshare is related to platform market share, with a bias towards iOS due to its disproportionate share of the high-end customers - latest official figures imply that the average iOS user is worth 4 Android users in terms of store revenues. Eastern Europe and the former CIS is an interesting exception to this rule; Android has a massive majority of device sales locally, yet 38% of developers prefer iOS, exporting their apps to wealthy western markets. Russia in particular has a high concentration of Hunters, developers seeking direct revenues from the app economy, combining their excellent technical skills and lower living costs to compete for direct revenues on the App Store. In a world where the developers that differentiate platforms now focus on only the top 1 or 2 platforms in their region, challenger platforms don't stand much chance of growing their market share.

THE PLATFORM WARS GO LOCAL

Platforms must now compete for users and developers on a regional level

Mobile Platform Mindshare

Top 6 platforms by use



Users

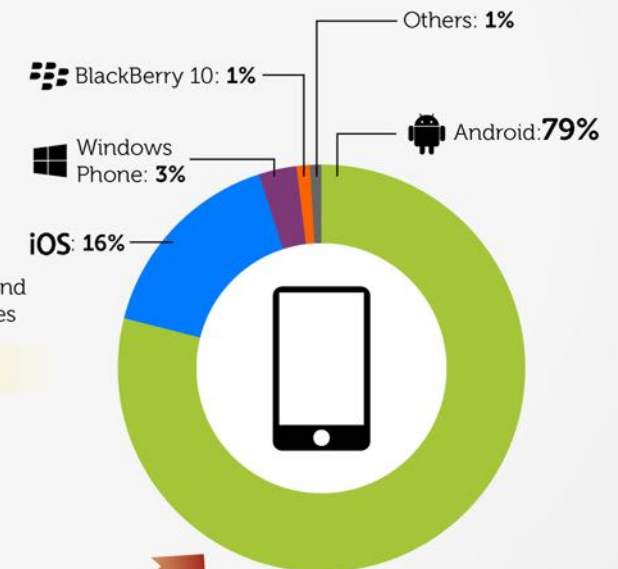


A large user base ensures developer mindshare



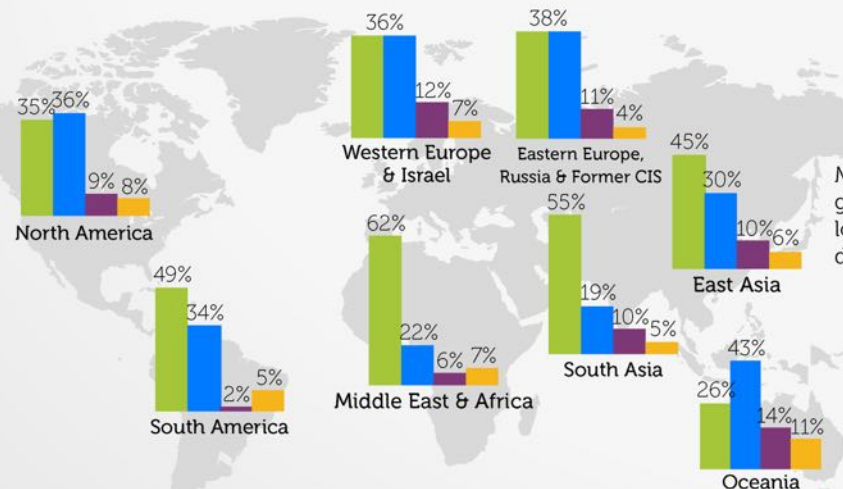
Smartphone market share creates an audience of users

Smartphone Market Share



Primary Platforms by Region Q3 2014

Legend: Android (Green), iOS (Blue), Windows Phone (Purple), Mobile Browser (Yellow)



Regional market share, user engagement and spending influence local developer priorities

Mindshare ensures global apps are available, local developers create differentiation

Apps

(more than 2 million)



App selection influences market share

Windows Phone hanging on, BlackBerry 10 sees weaker traction

BlackBerry 10 has been hit hardest here as they attempted to sell premium devices without a broad selection of valuable local content and services. Without significant device sales, developer mindshare has fallen to just 11%. They have now decided to ship their devices with Amazon's App Store, moving the focus of their developer outreach to enterprise and Internet of Things offerings.

In contrast, Microsoft has been able to gain some traction with lower cost devices aiming at first-time smartphone buyers with a trusted brand device, offering a superior overall experience to a comparably priced Android device. The problem with this low-end device strategy is that these users don't spend as much on apps and are less attractive to brand advertisers, which in turn makes them an unattractive target for developers. With Google having launched the Android One initiative to provide a quality Android experience in emerging markets at under \$100, Microsoft's window of opportunity here may be closing. They are up against formidable network effects that make it impossible to win the race with money alone.

HTML5 developers are abandoning the browser

Web technologies have had a very bad year in the battle for developer mindshare. In our last survey (Q1 2014) we asked developers if they used HTML5 as a platform to target mobile devices. We also asked how they used the technology: 37% of HTML5 developers were building websites or web apps and a further 15% built hybrid apps or used tools like Appcelerator Titanium to build native apps with JavaScript. Since HTML5 is a set of technologies and the browser is the distribution platform, this time we asked developers if they

targeted the mobile browser as a platform. We also asked about the programming languages developers use. The result is that only 15% of developers are targeting mobile browsers and a total of 42% are using HTML, CSS & JavaScript at all. It's now clear that the majority of developers using web technologies are not targeting mobile browsers. Although there are still a lot of hybrid app developers, the overall proportion of developers using HTML5 on mobile devices is falling, both through those switching to native code and new entrants adopting native platforms.

2 THE LANGUAGE OF APPS

As part of our 10,000+ developer survey, VisionMobile conducted the first-ever large-scale study of the languages developers use specifically for app development.

We asked both about the primary language developers use to build apps for their main platform and any other languages they use. It's interesting to compare our data to other widely read studies of language popularity because developers use this information to help them make decisions about where to invest their time and tools vendors use it to decide which languages to support. Even the decision to build the Android runtime around the Java language was not a purely technical one but influenced by the large number of existing Java developers that could be more easily attracted to a familiar-looking platform. The many attempts to build platforms around JavaScript and web apps have similar motivations. In the graphic you can see which languages are used by more than 10,000 developers and how our ranking compares with those from RedMonk and TIOBE.

JavaScript and Java top the charts

Our data shows that JavaScript and Java top the charts. This is inline with the latest RedMonk ranking for the top 2 languages. RedMonk tracks the number of new projects in each language created on

GitHub and the number of new questions with relevant tags on StackOverflow. These are good measures of the amount of code and knowledge being shared around a particular language.

Our research shows that only 15% of developers are targeting mobile browsers while 42% are using HTML, CSS and JavaScript. This begs the question, what are the rest of them using it for? Looking at primary languages, only 17% selected this option. This means the other 25% are only using it part of the time or for parts of their apps; it's a very popular secondary tool.

This secondary use is reflected in the TIOBE 9th place ranking. TIOBE measures search activity for each language, reflecting what the largest number of developers are working with across all software (most developers couldn't function for long without a search engine). Another factor in the lower TIOBE ranking is that the HTML, CSS & JavaScript combination is only useful for building user interfaces, which are the primary component of most mobile apps, whilst less central when considering all software. As the native language for Android and widely used on the server side, it's not surprising that Java ranks at or near the top on every measure.

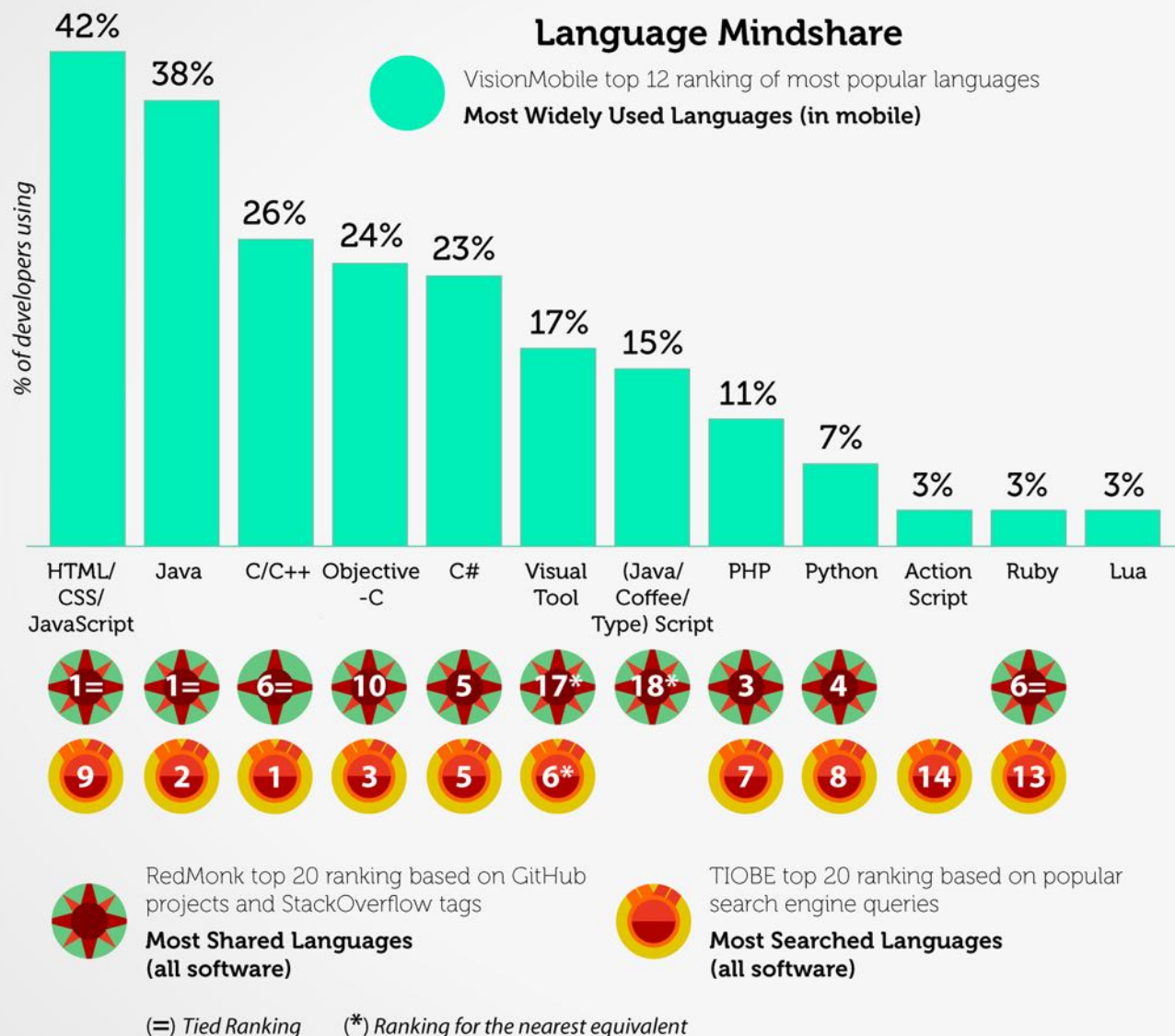
HTML5 TOPS LANGUAGE RANKING FOR MOBILE APP DEVELOPERS

The languages most developers use are not always the ones they use most



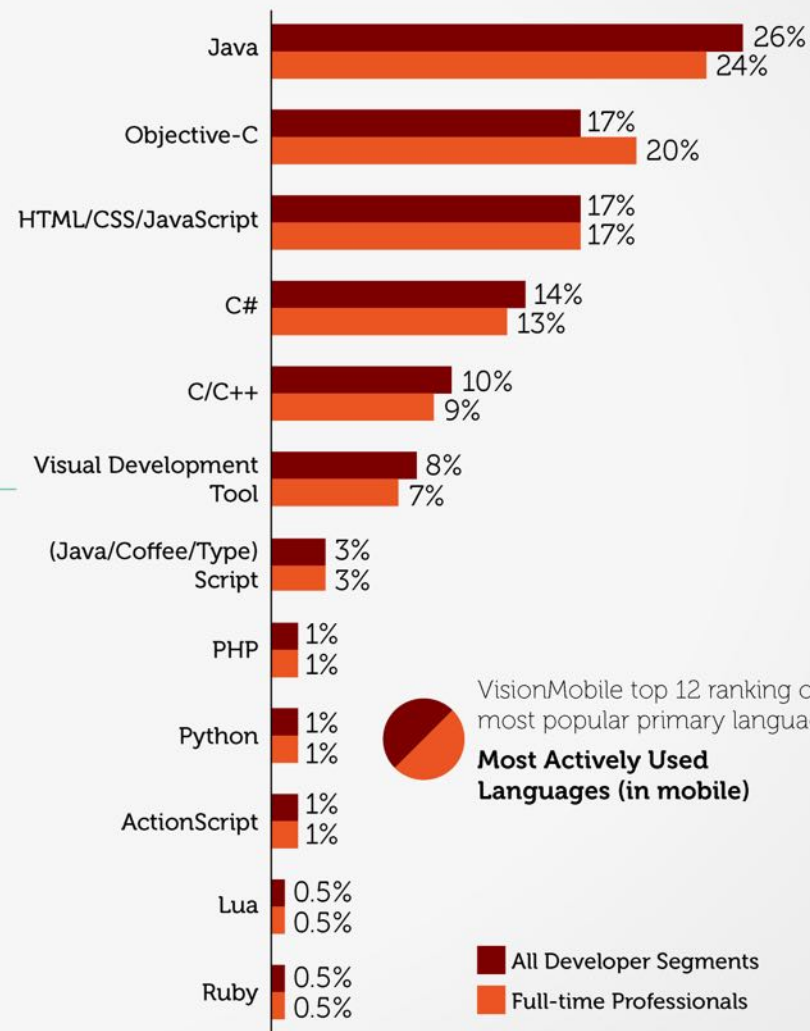
Language Mindshare

VisionMobile top 12 ranking of most popular languages
Most Widely Used Languages (in mobile)



Primary Language Share

% of developers using each as their primary language



C, C++ and Objective-C - popular but not shared?

The next most popular languages in our ranking are C and C++. These are popular in games development for performance reasons and there are lots of existing libraries that can be used directly in iOS projects and with Android's Native Development Kit (NDK). C++ is also the native language on BlackBerry 10. C and C++ are old languages and most of the interesting questions have already been asked and most useful libraries written, so they don't rank as highly with RedMonk. At the same time, they do show up at the top of the TIOBE search-based language rankings because they are extremely widely used in both embedded systems and legacy code bases for most types of project. As both C and C++ are highly performant but not very productive languages to work with on complex apps, mobile developers tend to use them where needed rather than for preference. Objective-C, as the native language for iOS development, is about as popular as expected in our study of 10,000+ app developers. By contrast it only comes 10th in the RedMonk ranking. This is explained by the weak open source culture around the platform and the large community on Apple's private developer forums. As an essentially Apple-only language, most of the use of Objective-C is as a primary language, particularly if we exclude Hobbyists and Explorers from our ranking so we're only looking at full-time professionals.

"Creating the right emotions for your customer is more difficult than building the algorithms or the technology"

Elizabetta Camilleri, Co-founder, SalesGossip

C# and beyond

Microsoft's C# language is the 5th most popular in our research and has an identical ranking with RedMonk and TIOBE. At 14% of developers using it as a primary language it is the 4th most popular, significantly more popular than Windows Phone as a primary platform. Microsoft's monopoly in desktop computing has created a large base of developers familiar with their technology and toolset. Many of those developers have looked to continue using some of their existing skills for mobile apps. This has led to Microsoft having greater developer mindshare than their device market share warrants. It has also created an opportunity for cross-platform tools (particularly Unity and Xamarin) that enable C# developers to target the leading platforms.

After C# we have Visual Development Tools, which have a relatively low ranking for overall usage considering that all of the main platforms provide some kind of drag and drop UI designer. Possibly not all developers count their IDEs built-in designer as a Visual Development Tool. However, as a primary choice, Visual Development Tools are surprisingly popular given that they are typically rather limited in what they can create.

Finally, the use of JavaScript without HTML and CSS, along with languages that compile to it such as CoffeeScript and TypeScript is popular for cross-platform tools and for mobile backend development with node.js. Beyond this, popularity drops away rapidly, with hardly any developers using anything else as a primary development language, although there is a fairly long tail at the 1% or less level.

3 TO GO NATIVE, OR NOT TO GO NATIVE, THAT IS THE QUESTION

How many developers are building native apps? What other languages do they use if they don't go native? Our survey data has the answers.

Adopting the native language and frameworks for a platform represents a significant learning investment and also makes it more difficult to port apps to other platforms. The trade-offs are the ability to exploit all of the functionality and performance of the platform and the capability to deliver an experience that matches device users expectations precisely. On the other hand, by adopting a cross-platform approach developers can save significant development costs when targeting multiple platforms, making it easier to adopt each new platform. As such, we can use the fraction of developers using the native language on each platform as a measure of developer investment and loyalty.

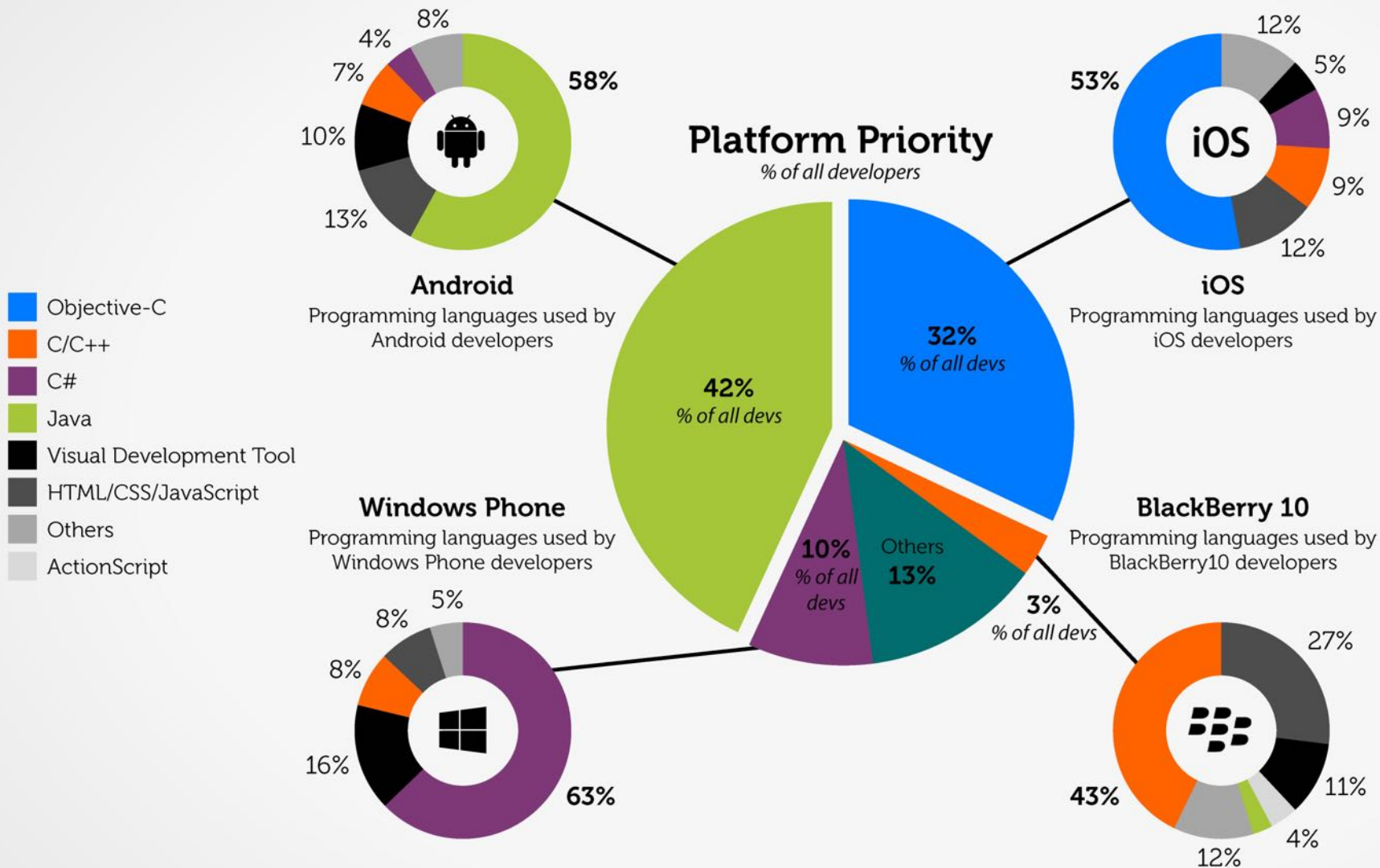
Android leads iOS in priority and loyalty

Android is pulling significantly ahead of iOS as a primary platform globally (42% versus 32% of developers). This is despite the fact that Android-first development is not very common amongst the high-profile startups that attract all of the media attention in the West. Then iOS also has a lower percentage of developers building apps in its native Objective-C (53%) than Android developers building native Java apps (58%). If we combine these measures we have 24% of

mobile developers primarily creating native Android apps against just 17% creating native iOS apps; that's a significant advantage to Google's ecosystem in terms of fully invested developers. The paradox here is that Apple and Google both seem to be making strategic moves to close the gap. Apple recognised a weakness with the relatively small population of Objective-C developers prior to the launch of the iPhone and initially banned all third-party runtimes and cross-platform tools, forcing developers to learn Objective-C. Having relaxed those rules to keep up on application volume they've now created Swift, which they hope will lower the perceived barriers to entry for native development. Google's strategy on the other hand would really like everyone using web technology so they can more effectively track users for ad targeting purposes. Their latest design and technology moves blur the lines between native apps and the web. They are indexing apps like websites and allowing searches to deep link. The new Material design lets developers build UIs with a completely native feel using native or web technologies.

IOS, ANDROID AND WP HAVE A LANGUAGE LOCK-IN ON MOST OF THEIR DEVELOPERS

Primary language use by platform indicates levels of developer loyalty



Microsoft developers the most loyal?

Windows Phone developers have the highest levels of investment in their platform with 63% developing apps in the native language, C#. There are likely multiple reasons for this; first it is hard to develop most types of app cross-platform and target Windows Phone because the UI is very different from the other platforms; second, cross-platform games built using Unity (the most popular tool) are also likely to be using C#; third, Microsoft's changes to what can and can't be used to develop for the platform between WP7 and WP8 make it very difficult to target both versions (and thus the entire installed base) in many other ways.

Microsoft has far greater developer mindshare in its tooling than its platform. There are almost as many developers using C# with iOS or Android as their primary platform via Unity and Xamarin as there are building native apps for Windows Phone. In the case of Xamarin, developers have to learn the native UI framework on their target platform as the tool provides a thin wrapper around the APIs. This still involves significant investment in the platform, whilst sticking with a preferred language. There are about twice as many C# developers primarily targeting iOS versus Android, suggesting that many of them may be using a cross-platform tool to target just the one platform. This data suggests that Microsoft should accelerate their recent moves to embrace the other platforms with their tools as well products. In the same way that Satya Nadella's new strategy has Microsoft's products embrace other platforms, they can enable existing C# developers to keep using their technology without missing out on the obvious scale advantages of the other platforms.

BlackBerry developers are keeping their options open

For the loyal few remaining developers that still prioritise BlackBerry 10 you might expect to find the highest levels of investment in native apps. Instead, we see the lowest level of native app developers at 43% and the greatest fraction of web developers at 27%. This is partly due to BlackBerry 10 having first class web apps, which goes some way towards explaining this. It's also a safety net as building a web app, even one that uses some native platform APIs, does leave developers with a fairly portable code base if things don't work out. Java is less popular as a primary language at only 3% of those that prioritise BlackBerry 10, yet much more popular amongst those who also target the platform. **Adding an Android runtime is a viable way to bootstrap an app offering with low cost ports, but it doesn't buy you any developer loyalty.** In this context it'll be interesting to watch the fortunes of the initially successful Amazon Fire OS and Nokia X platforms as they inevitably diverge further from Google's version of Android.

"The gap between HTML and native is widening. The native SDKs introduce new APIs at a faster rate than HTML5 can keep up with. To harness the power of these new APIs native is the only viable option."

Conny Svensson,
Managing Architect and Strategist - Mobility,
CGI Sweden

4 THE DISAPPEARING MIDDLE CLASS OF APP DEVELOPERS

We estimate there are 2.9 million mobile developers in the world, creating more than 2 million apps. Somehow most of that activity needs to be paid for.

It's been widely reported that a tiny fraction of developers are making most of the direct revenues from the app stores. Considering revenues from any source the picture is not much better. The revenue distribution is so heavily skewed towards the top that just 1.6% of developers make multiples of the other 98.4% combined. It seems extremely unlikely the market can sustain anything like the current level of developers for many more years. A large part of this is down to what developers choose to build (more on that in the chapter 5) and how they fail to market it. However, Apple and Google have done such a good job of commoditising their complements in economics terms that it's close to impossible to build sustainable businesses for many types of apps. This is a loss for users - even a multi-award-winning productivity app company like FiftyThree (makers of Paper) is not sustainable as a pure software business and has to pivot to selling physical items and hardware to go with their app.

The Have Nothings - 47%

At the bottom of the app revenue pile, 24% of all developers that are interested in making money make nothing at all. A further 23% of

developers make something but less than \$100 per app per month. This level of revenue is unlikely to cover the basic costs of a desktop machine for development, test devices and an account to publish apps. Those prioritising iOS are significantly less likely to suffer this fate, with “only” 35% earning \$0-100 versus 49% of Android developers and an even higher percentage on all other platforms.

Around 35% of the total developer population are part-timers - Hobbyists and Explorers that don't need to make any kind of return on their apps - even so more than half of those are interested in making some money from their efforts. Less than half of these revenue-interested part-timers are making \$0 per month, so there's a very large number of full-time professional app developers whose apps earn nothing. In some cases these are apps that have not launched yet, or are trying to build a bigger audience before going for revenue; others have simply failed, lost on the dusty back shelves of the app stores where no-one ever sees them.

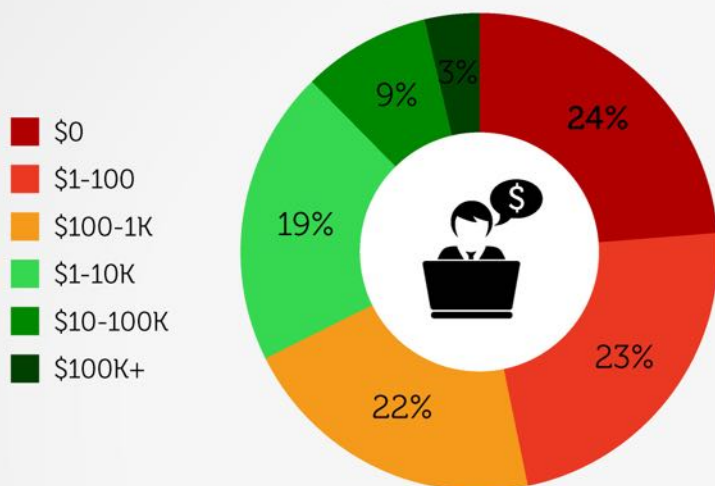
THE APP ECONOMY IS A WINNER TAKES ALL GAME

How many app businesses are sustainable?

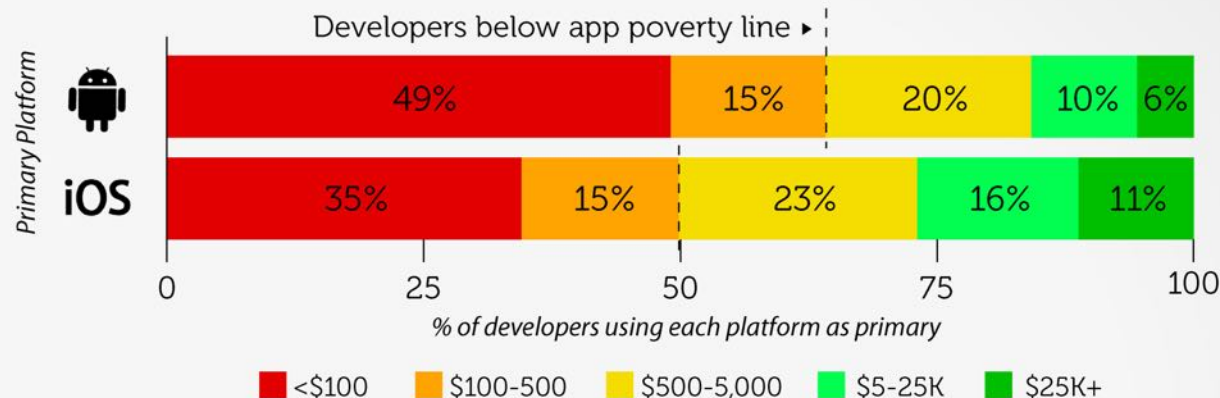


Monthly App Revenues

% of all developers interested in revenues



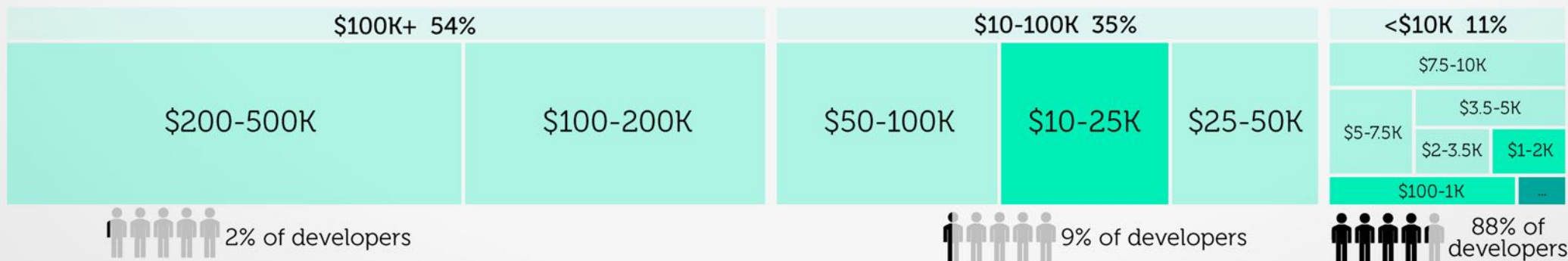
Revenue Distributions - Android vs. iOS First



1.6% of developers have an app earning >\$500k per month. Together they earn multiples of the other **98.4%** combined.

How App Revenues are Split

Here's how revenues are split amongst those earning < \$500k per month. Box area is proportional to the fraction of total revenues earned by each group.



The Poverty Stricken - 22%

Another 22% of developers earn between \$100 and \$1000 per app per month. If we consider that the median number of people involved in development in this revenue band is 3, there are very few places in the world where this will cover average developer salaries. On both iOS and Android, 15% of developers earn between \$100 and \$500 per app per month, leaving just 7% in the upper half of this revenue band. Overall this puts 62% of developers below our “app poverty line” of \$500 per app per month and at least 69% that can’t sustain full-time development.

The Strugglers - 19%

The next 19% of developers earn between \$1k and \$10k per app per month. This level of revenue could be anything from of good living to a very nice supplement to freelance work, depending on where in the world the developer is located. That said, it’s worth considering that an app at this level is likely to be more complex, possibly requiring more development effort or having ongoing server hosting costs in order to deliver a service. These apps are relatively successful as products, in that they’re clearly valuable to their customers but very few of them would be considered a financial success against the alternatives available to their creators. Strugglers, Poverty Stricken and The Have Nothings make up a staggering 88% of developers in total who look more like struggling artists than highly skilled engineers.

The Haves - 12%

The top 12% of developers are the Haves. They make more than \$10k per app per month. 17% of iOS-first developers are in this

group versus 9% of Android-first developers. For comparison a rank-100 grossing game on iOS in the US only would expect to make about \$10k per day. Only the top 1.6% of developers make more than \$500k per app per month and some of those earn tens of millions of dollars every month. Between them they earn multiples of all the other developers combined. The next 2%, earning between \$100k and \$500k collectively make more money than the remaining 96.4%. Less than 4% of developers who earn between \$25k and \$100k again make more than everyone earning less than them combined. Finally just under 5% of developers who earn between \$10k and \$25k make almost as much as the 88% of developers discussed in the sections above. More than 50% of app businesses are not sustainable at current revenue levels, even if we exclude the part-time developers that don’t need to make any money to continue. A massive 60-70% may not be sustainable long term, since developers with in-demand skills will move on to more promising opportunities.

“I dropped Android due to fragmentation and low revenues. The revenues from my Android apps were just 10% of those for my iOS apps.”

*Marcus Roskosch
Freelancer*

5 THE NEXT GOLD RUSH: ENTERPRISE APPS

Developers hoping to build businesses around app development should consider the audience they develop for very carefully.

The app stores opened up an extremely straightforward method of both distributing software directly to consumers and monetising it. That created a very low barrier to entry, which in turn resulted in a phenomenal amount of competition from all over the world. Today, app stores are so completely jam packed with consumer apps that an overwhelming majority of them struggle to get noticed or make any significant revenue. Even the lucky (and talented) few developers that get their apps promoted by the stores need to find other marketing channels too. Most methods of marketing apps cost money, particularly the scalable ones. Only the apps with the highest revenues per user can then afford to be discovered by a lot of potential customers. Despite this dynamic, 67% of developers are still targeting consumers and a further 11% target individual professionals directly rather than their employers.

Enterprises adopt mobile, particularly iOS

Smartphones and tablets were introduced as consumer-first technologies, which led to developers initially building consumer apps. Now a growing number of enterprises are adopting mobile technology; this is all businesses, governmental and non-profit

organisations, not just large corporations with IT departments. Although this wave of adoption is still only in its early phases, already the 16% of developers who target enterprises are twice as likely to be earning over \$5k per app per month and nearly 3 times as likely to earn over \$25k. The early platform winner here is iOS, with Apple claiming adoption by 98% of the Fortune 500 companies. Our data from 10,000+ app developers shows that lead is reflected in the wider market, with iOS developers targeting enterprises being about 2.5 times more likely to be earning over \$25k per app per month than their Android counterparts.

Enterprise developers adopt Android ahead of iOS

It may come as a surprise but 10% more enterprise developers are targeting Android than iOS. Perhaps more surprising is that Microsoft and BlackBerry, the companies with a much greater history in this market, have very weak adoption by enterprise developers. Are these developers investing in a future where they see Android inevitably dominating the enterprise device market as it's now doing with consumers, or are they simply choosing their preferred technology?

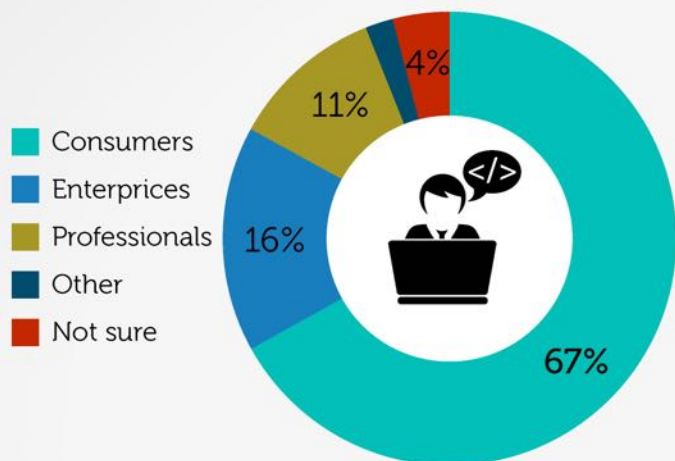
THE UNTAPPED ENTERPRISE APP OPPORTUNITY

Businesses pay much more for software than consumers, disproportionately on iOS



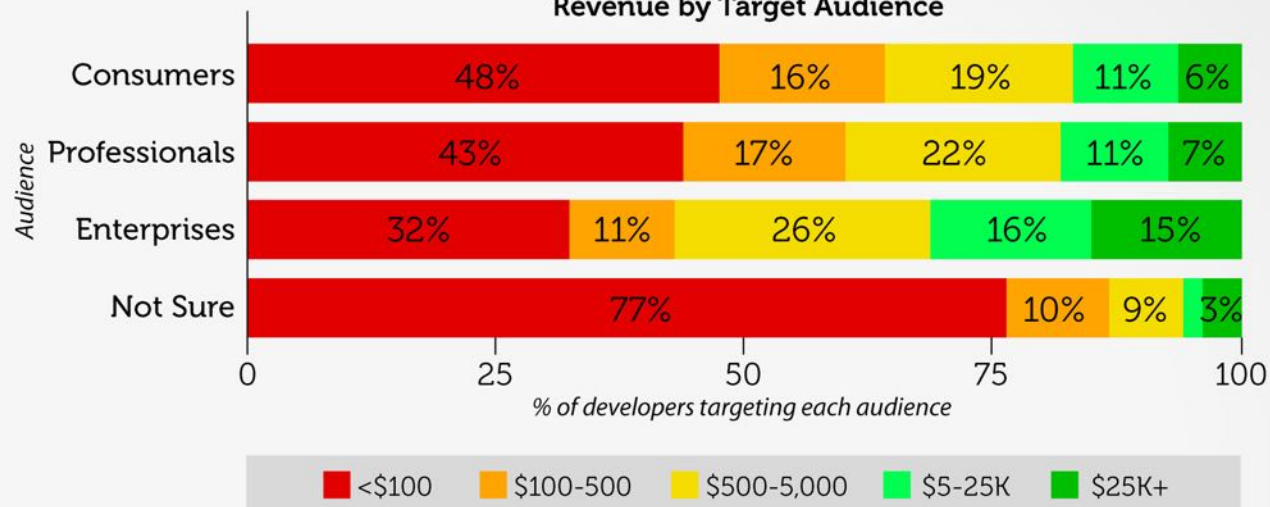
2 out of 3 developers target consumers...

Developers Split by Primary Audience



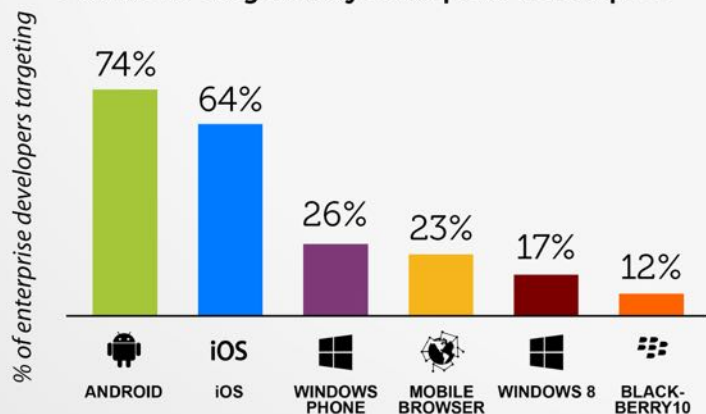
...yet targeting enterprises is more lucrative

Revenue by Target Audience



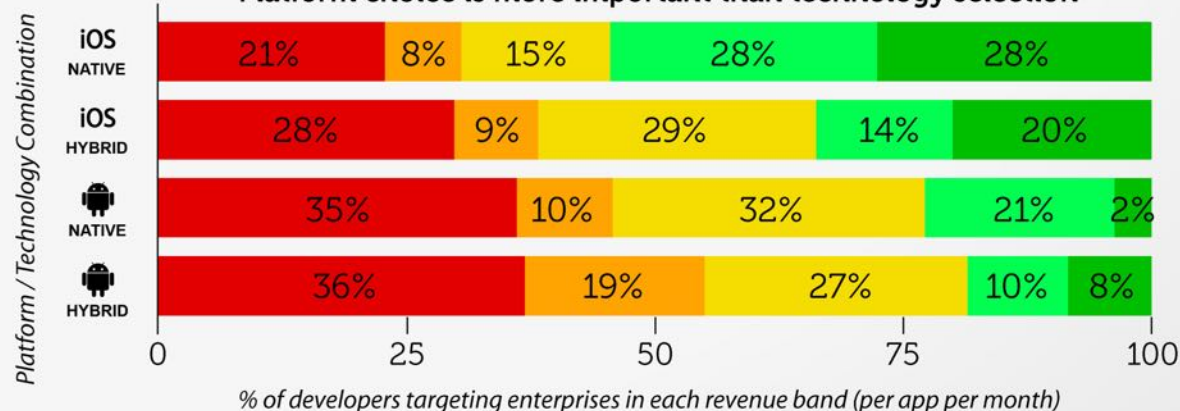
10% more enterprise developers target Android than iOS and...

Platforms Targeted by Enterprise developers



17% more enterprise developers build native apps for Android than iOS

Platform choice is more important than technology selection



It's likely that technology preference is trumping business sense, since the largest fraction of enterprise developers are building native Android apps, which generate the lowest average revenues. This is in strong contrast to native iOS apps where 55% of developers make more than \$5k per app per month.

Apple and Google embrace enterprises

The platform owners are providing clear signs that there is much greater enterprise adoption and significant opportunities for developers to come. Apple has been rapidly adding features to iOS over the last couple of years to make it more enterprise friendly. They've also recently announced a strategic partnership with IBM to deliver products and software solutions for the enterprise. Now that Microsoft has reversed the strategic decision to keep their Office suite exclusive to their own platform there are very few barriers to adoption remaining in large companies. Similarly Google has recently announced the integration of Samsung's Knox enterprise security solution into the Android platform and acquired Divide, integrating their work/personal device splitting solution to support the BYOD trend. The growth in mobile enterprise development is likely to include a lot of contract work and niche Software-as-a-Service subscriptions, nowhere near as much of a winners-take-all market as the consumer market.

6 THE STATE OF THE GAME DEVELOPER NATION

Games dominate the consumer app economy. App Annie's figures show that over 80% of the revenues from app stores are in the games category and that percentage is growing.

A large fraction of mobile ad revenue is also generated by games. It's not unfair to categorise the consumer apps market as mostly a games market. Our research across more than 10,000 app developers found that 33% of developers are making games but the vast majority of revenues are concentrated amongst a handful of publishers making 10s or even 100s of millions of dollars a year. Almost all of these are free-to-play games, monetising a tiny fraction of their audience via consumable in-app purchases. The large number of games with high quality free content makes getting noticed with a new free title difficult. At the same time they are destroying the market for pay-per-download games. The result is that 57% of game developers intending to generate revenue make less than \$500 per app per month, i.e. fall under the app poverty line.

Seeking revenues across platforms

Games generally take over the entire screen of the device and are unconstrained by the UI conventions of the platform. This makes games much more portable across platforms than most other apps. Most games developers take advantage of this, in search of a bigger audience. The average games developer targets 3 platforms,

compared to an average non-games developer at 1.75 according to our research. This increased portability also shows up as a higher proportion of games developers on minority platforms. The mobile browser is the major exception here, since most games are built with native code for performance and are not easily ported to the web. BlackBerry 10 also has a lower ratio of games to non-games developers relative to its popularity. This is likely due to the ease of porting non-game Android apps but also lack of an NDK environment that many Android games depend upon. Game developers priorities are evident in the number of platforms targeted by those who use each platform. The typical Nokia X game developer targets almost 6 platforms, meaning that they also target most of the more popular platforms first.

Unity dominates the tools market

In order to go cross platform, a most mobile game developers use third party tools. Unity is by far the most popular, being used by 47% of game developers. The key attractions of Unity are a visual editor for manipulating 3D content, an active ecosystem of asset and plugin creators and relatively low license costs. It also supports all

THE STATE OF THE GAME DEVELOPERS NATION

In a multi-platform world, it takes experience and scale to succeed consistently



33%

of developers make games



40%

of downloads are games



57%

of games make < \$500 per month



70%

of developers shipped < 4 games

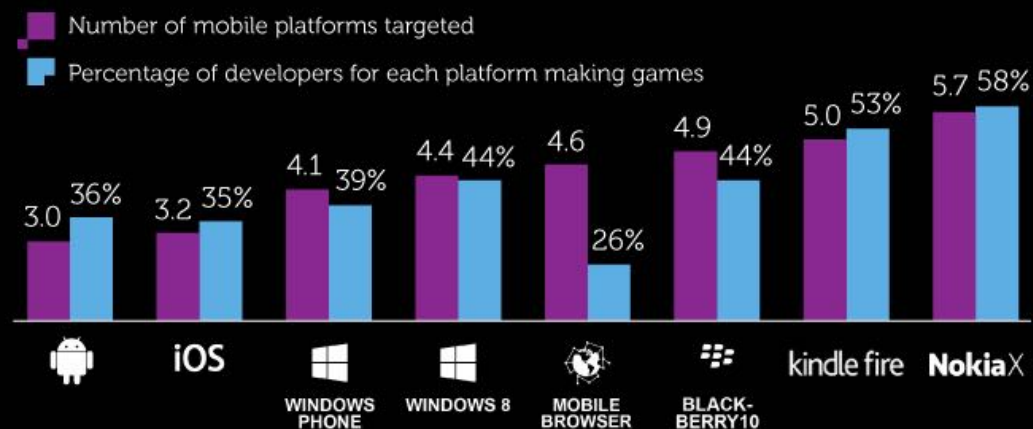


80%

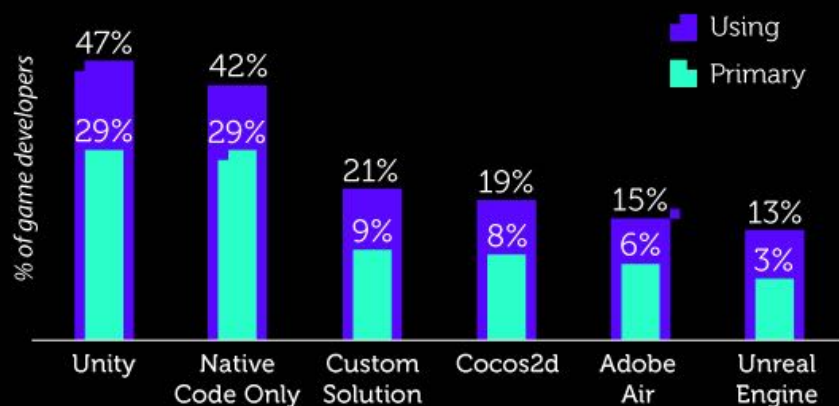
of store revenues are from games

GAME DEVELOPERS ARE MOST LIKELY TO ADOPT NEW PLATFORMS

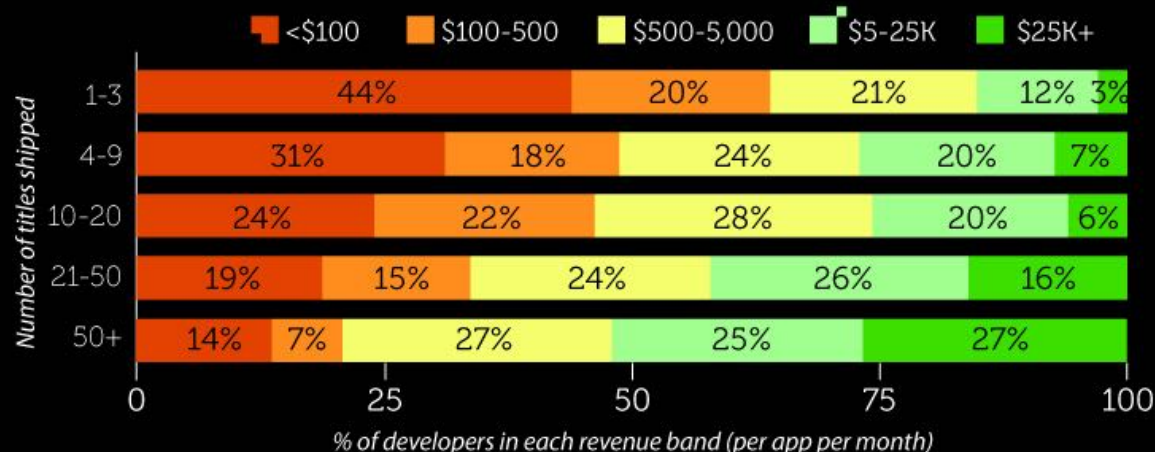
Game developer attitudes, by platform used



UNITY BEATS ALL OTHER GAME DEVELOPMENT TOOLS



EXPERIENCE BREEDS FINANCIAL SUCCESS



Source: Developer Economics: State of Nation Q3 2014 | www.DeveloperEconomics.com/go | Licensed under CC BY ND | Copyright VisionMobile

major mobile, PC and console platforms. Unity boasts a community of 2.9 million developers, of which 630,000 are active monthly, according to the vendor.

The next 3 most popular options for mobile game developers are either in-house developed or fully open source. It seems a large share of mobile game developers like to control their own destiny and not be tied to proprietary third party code. This makes the Unreal Engine an interesting tool to watch over the next few years. As a cross-platform 3D engine with advanced editing tools it's similar to Unity in many ways. It's technically superior both in terms of graphics performance and tooling but has historically been massively more expensive to license for equivalent use to Unity. Having said that, in March this year Unreal Engine switched to a very low cost monthly subscription model with a 5% gross revenue share for full source code access. Although the revenue share will cost much more than a Unity license for a successful game, it removes the barrier to entry and gives developers full control of their code.

The data from our survey of 10,000+ app developers shows that Unreal Engine and Marmalade are the tools associated with the highest revenues for developers using them. These tools have typically been used to port games from consoles and other handheld gaming devices and so it's not clear if similar results are achieved on new development projects.

Experience breeds success

Game design is a highly creative art that takes a lot of practice. Angry Birds was creator Rovio's 52nd title. It is therefore not surprising to find that those who have shipped a lot of game titles are the most successful. The 3% of mobile game developers who have shipped 50+ titles are nearly 9 times as likely to be earning over \$50k per app

per month than the 62% who have only shipped between 1 and 3 titles. Supercell might seem like the exception that proves the rule as the top grossing games publisher worldwide with only 3 titles. However, the management and majority of developers at Supercell have a very long history in mobile games, going back to early Java ME titles more than a decade ago. They also build far, far more games than they ship - a luxury of wealthy and well-funded developers. Moreover, in a world where most developers are priced out of the main promotional channels by the top free-to-play titles, having a large collection of games that can cross-promote one another is an extremely valuable marketing advantage. The mobile games market is undoubtedly highly competitive. Those that really want to participate should persevere but rather than continuing to work at updating and marketing a failed title, our data suggests it may be better to learn from it and build another one instead.

7 TOOLS OF THE APP DEVELOPER TRADE

It has never been easier for a solo developer or small team to build a complex software-based product or service. The 1,000+ powerful third party tools that are currently available enable app developers to write less code but they also lead to very high user expectations for what an app can do.

Only the largest software houses, who can justify the investment required to build their own toolset, can afford to ignore all third party tools. Smaller developers choosing to create their own tools are likely to be left behind with uncompetitive apps or too much time wasted.

Developer tools add value at every step of the developer journey from prototyping through to customer support. A games developer cannot justify the cost of building a high performance games engine to build one game - they probably just want to focus on implementing their game idea anyway. Similarly building an advertising system and selling ad inventory directly is a massive effort versus simply integrating a third party ad network. How can developers know where to improve their apps if they don't have user analytics or crash and performance monitoring. Building fully featured versions of these services is likely to be much more work than the original app idea.

Why don't developers use more tools?

There's clearly a strong case for developers to adopt third party tools. Add to this the fact that all of the tool categories in our top 10 have free options for a developer to get started. It should therefore come as a surprise that the average developer only uses tools from 2 categories. It makes sense that hobbyists with no intention of making money from their apps would avoid tools that might incur costs at some point (although even then there are open source options). However, 26% of developers that are interested in making money don't use any third party tools. Of those developers, 79% make less than \$500 per app per month. Worse yet, tools usage is falling, a year ago only 14% of developers were not using any third party tools. The category with the highest adoption last year was User Analytics tools with 38% of developers using them. In this survey only 21% of developers were integrating User Analytics. Lack of awareness about what tools are available, particularly as growing numbers of

TOOLS OF THE APP DEVELOPER TRADE

Tools let you do more with less, use them or be left behind



All of the 10 most popular third party tools categories have options for a developer to get started for free.

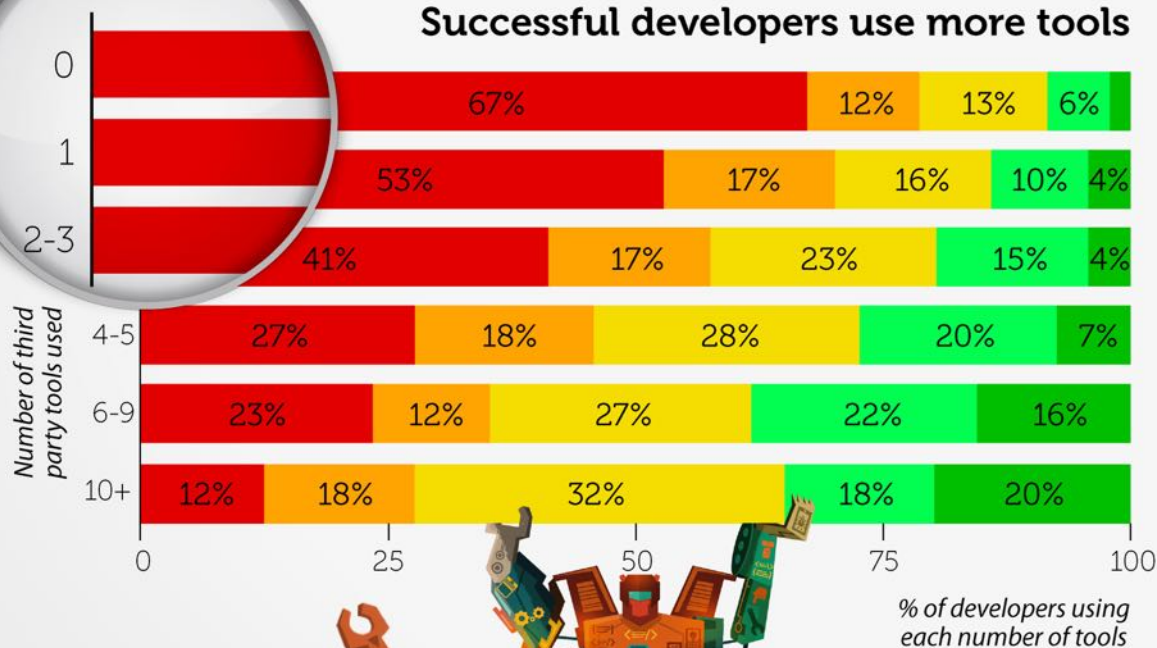
Despite this fact, **26%** of developers interested in making money do not use any third party tools.

Of those developers **79%** make less than \$500 per app per month.

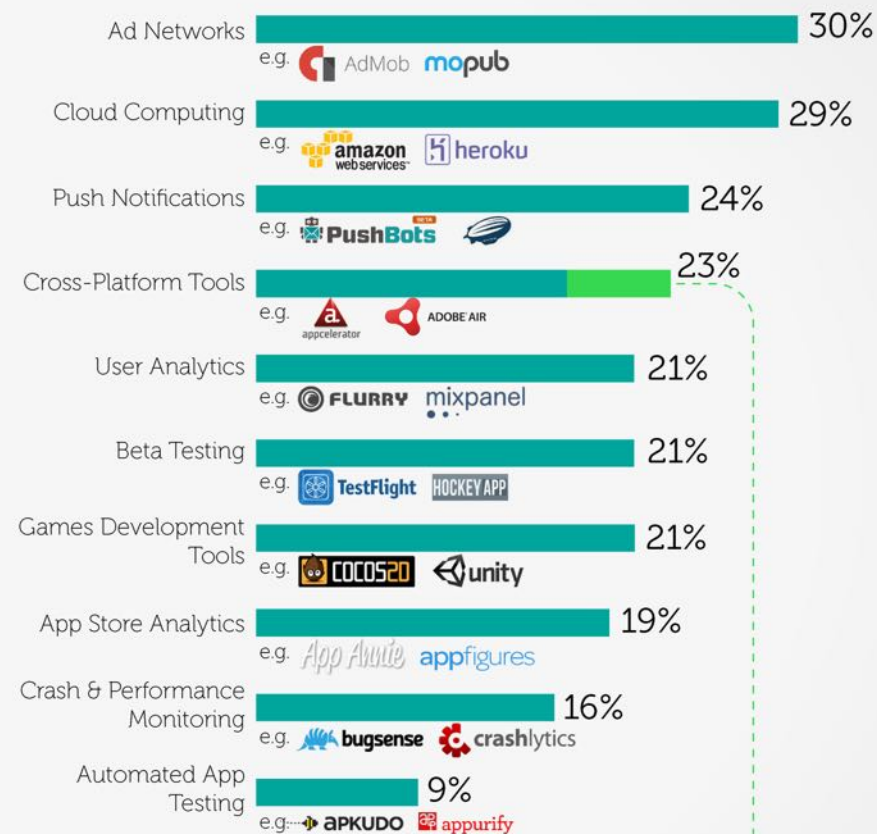
The average developer uses just **2** tools.



Successful developers use more tools



10 Most Popular Third Party Tool Categories



Wrong tool for the job?

26% of Cross-Platform Tool users only target **1** platform. By doing so they get all the disadvantages without the main benefit. They are amongst the lowest revenue earners of all tool users.

developers switch to mobile platforms, is part of the reason but it cannot be the whole story.

It's not what you use but how you use it

One possible answer to this puzzle is that developers abandon tools because they're getting little value out of them. In the case of User Analytics, the minimal integration only takes minutes but it simply records how many of each device model has used an app, when and for how long. It doesn't help provide any insight into why some users spent longer than others or what they did. To get that developers have to implement some custom event tracking. Without that extra work the tool is unlikely to benefit the app, it just provides some low value statistics. If a developer isn't getting any benefit from the analytics then they're more likely to drop it than upgrade to a newer version when problems arise. For example, many analytics tools started causing app store review failures because Apple changed their policy on user privacy and tracking.

Another common case is Cross-Platform Tools (CPTs), which many developers use very effectively to reduce the costs of building apps for multiple platforms. It might seem counter-intuitive but there are 26% of CPT users who only target a single platform. They are most likely using the CPT to avoid learning the native platform rather than for greater reach or cost efficiency; a decision to help the developer rather than the customer. These developers report unusually low revenues, whilst those using CPTs to target multiple platforms have slightly higher than average revenues. It's easy for these single platform CPT users to blame the tool and abandon it in favour of native development. Instead what really happened was that they used the wrong tool for the job.

The tools of the successful app developers

More experienced app developers are more likely to use any given category of tool, although even the most experienced with 10+ years building mobile apps behind them, still only use tools from 3 different categories on average. The favourite category of the most experienced and successful developers is Cloud Computing, for example Amazon Web Services or Microsoft Azure. This category of tool is used by 40% of developers with more than 6 years experience build mobile apps.

Use of almost any tool category except Ad Networks - the most popular - is correlated with higher revenues. There is a very strong correlation between using more tools and earning more revenue. A positive feedback loop exists here. More successful apps need more tools - automated testing, crash and performance monitoring, in-app help and feedback - and more tools enable further improvement of the app. This is not the only cause of the correlation though. More sophisticated app businesses use tools to help them write less code, implement more revenue models and measure the impact of their product and marketing decisions.

"A lot of the heavy-lifting is done by developer tools and APIs. This reduces effort and time-to-market significantly but it still pays to know what is going on underneath."

*Peter Winkler
Freelancer*

8 THE DIVERSE SPECTRUM OF APP DEVELOPERS

Developers are much more than just machines for turning coffee into code. They have many and varied motivations for building their apps.

Although most of the developers on any one platform share common tools and technology, they have very different goals, motivations and definitions of success. Understanding developer motivations is critical because many see developers as the new kingmakers; forward thinking businesses realise that developers are their innovation engine, their most promising affiliates, their evangelists or their fastest growing resellers. Millions of dollars in marketing are expended every year attempting to persuade developers to choose a specific company, platform, tool or API set. Even small independent developers themselves can benefit from a greater understanding of whom they're competing against.

The 8 developer segments

We have developed a [segmentation model based upon the Jobs to Be Done methodology](#), popularized by Harvard Professor Clay Christensen and which constitutes today's cutting edge in segmentation techniques. The model was produced using hard data from over 6,000 developers in our Q3 2013 survey and consists of eight developer segments - the Hobbyists, the Explorers, the Hunters, the Guns for Hire, the Product Extenders, the Digital

Content Publishers, the Gold Seekers and the Enterprise IT developers. You can see the definitions of the segments and what motivates them in the infographic, along with how they collectively make up the developer population and economy. These segments have been relatively stable over the last 12 months, with the only significant change a 4% increase in Explorers. This shift reflects the increasing number of developers considering switching to mobile platforms or building businesses in the app economy.

Platform preferences

The breakdown of developer segments that target each platform is determined by how well the platforms help them meet their goals. Adoption of iOS amongst Explorers and particularly Hobbyists is limited - this is largely by design on Apple's part. It's not possible to test iOS apps on a real device without signing up for a \$99/year developer program membership. Apple's App Store review policies also actively discourage "amateur hour" warning of rejection for apps that are not up to the expected standard. On the other hand, Hunters are significantly more likely to adopt iOS because of its greater revenue potential.

THE SPECTRUM OF APP DEVELOPERS

The 8 developer segments making up the app economy, and their motivations



AIM - Self improvement



Hexagons show % of total developer population in Q3 2014



AIM - Revenues from the app economy



AIM - Growing a business



EXPLORERS

Independent developers gaining experience as a side project to seize on future opportunities

MOTIVATIONS:

Creativity, self achievement, exciting industry



HOBBYISTS

Moonlighters building their own apps to learn and have fun

MOTIVATIONS:

Fun, creativity, self achievement



HUNTERS

Experienced developers building an app business and focused on the money

MOTIVATIONS:

Building business, money, self achievement



GUNS FOR HIRE

Seasoned pros developing apps on commission

MOTIVATIONS:

Building a successful business, money, exciting industry



PRODUCT EXTENDERS

Companies using apps to promote or extend a non-mobile product or brand

MOTIVATIONS:

Better products than competition, wide audience, exciting industry



ENTERPRISE IT

CIOs and IT managers using apps to increase organisational efficiency and reduce costs

MOTIVATIONS:

Better products than competition, exciting industry



DIGITAL CONTENT PUBLISHERS

Developer teams using mobile apps to monetise digital content inventory

MOTIVATIONS:

Building business, money, creativity



GOLD SEEKERS

Mobile startups aiming to hit VC gold

MOTIVATIONS:

Building a successful business, money

Windows Phone's developer population is biased the other way. Hobbyists and Explorers are a significant proportion of those who prioritise the platform. There are two key reasons for this. Firstly, the much smaller installed base of Windows Phone devices makes it less attractive to those who care about revenue (Hunters) or reach (Product Extenders, Gold Seekers & Digital Content Publishers). Secondly, there are a lot of "Microsoft developers" trained in C# and related tools that find Windows Phone an easy way to get started with mobile apps. The platform has grown sufficiently to attract Hunters with successful apps on other platforms looking to gain extra revenue from their established app assets and brands.

Notably lacking from both Microsoft and BlackBerry's new platforms are the Enterprise IT developers and others trying to grow businesses. It seems that whilst trying to create more consumer friendly products they have lost a lot of their traditional enterprise customer base. The last strongholds of the mobile browser are amongst these same segments. Meanwhile, Android's dominance of smartphone market volumes ensures that it's the most popular platform amongst all developer segments. Most importantly, those that prioritise some other platform are very likely to also support Android.

Why it pays to understand the developer segments

If you're building an app business then knowing about the motivations of your competitors is vital. For example, if you were hoping to make a living selling utilities on Android then you'll face competition from a lot of developers that are building them for fun and don't need to make any profit.

Even more importantly, if you're building tools for developers then you need to know which ones to target in different stages of your project (hint: usually the Hobbyists or Explorers first) and how to design your marketing and incentives to reach them. For example, Amazon has recently incentivized developers to target their new Fire Phone with \$5,000 of Amazon Coins for users to spend in or on each of the developer's apps that adopt certain new APIs specific to the device. This may attract the minority of Hobbyists and Explorers motivated by the money and Hunters that were interested in supporting the platform anyway, however, the development and marketing effort required makes it unlikely to be significantly profitable for most Hunters. This incentive appears to target all 3 of these segments whilst not aligning with any of them particularly well.

"For Kenya and African countries the biggest challenge is initial funding/financing – there is much less funding available than for companies in Europe. Even signing up for a developer account on Apple is too expensive."

Bofya! (app publisher)

METHODOLOGY: BREAKING THE CEILING OF 10,000 APP DEVELOPERS

Developer Economics 7th edition reached an unprecedented 10,000+ respondents from 137 countries around the world. As such, it is the largest ever research on app developers and trends in app development. This report is based on a large-scale online developer survey and one-to-one interviews with mobile app developers. The online survey was designed, produced and carried out by VisionMobile over a period of five weeks between April and May 2014. One-to-one interviews were conducted in May and June 2014.

Respondents to the online survey came from over 137 countries, including major app development hotspots such as the US, China, India, Israel, UK and Russia and stretching all the way to Kenya, Brazil and Jordan. The geographic reach of this survey is truly reflective of the global scale of the mobile app economy.

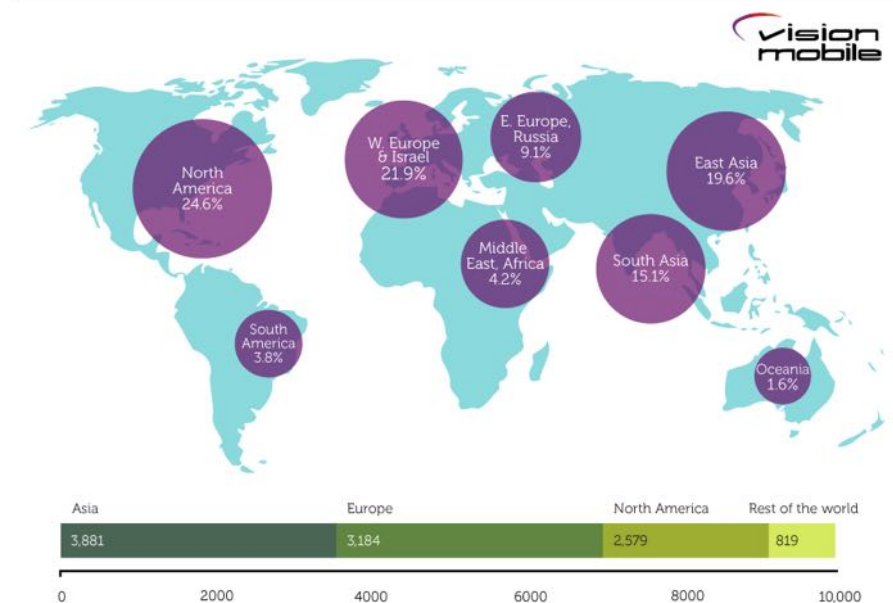
The online survey was translated in 6 languages (Chinese, Portuguese, Japanese, Korean, Russian, Spanish) and promoted by 67 regional and media partners within the app development industry. As a result, the survey reached an unprecedented number of respondents, globally balanced across Europe (30.4%), Asia (37.1%) and North America (24.6%). The online survey also attracted a significant developer sample from South America (3.8%) and Africa (2.4%).

To eliminate the effect of regional sampling biases, we weighted the regional distribution by a factor that was determined by the regional

distribution identified in our [App Economy Forecasts \(2013 - 2016\) report](#) published in July 2013, as shown in the graph below.

GEOGRAPHICAL DISTRIBUTION OF 10,000+ RESPONDENTS

% of respondents from each region (n=10,463)



Source: Developer Economics: State of the Developer Nation Q3 2014 | www.DeveloperEconomics.com/go
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The survey gathered responses from developers across 15 mobile platforms including Android, Amazon Fire OS, BlackBerry 5/6/7, BlackBerry 10, Firefox OS, iOS, Java ME, Jolla Sailfish, Mobile Browser, Nokia X, Qt, Windows Phone, Windows 8 and Ubuntu Phone.

To minimise the sampling bias for platform distribution across our outreach channels, we weighted the responses to derive a representative platform distribution. We compared the distribution across a number of different developer outreach channels and identified statistically significant channels that exhibited the lowest variability from the platform medians across our whole sample base. From these channels we excluded the channels of our research partners to eliminate sampling bias due to respondents recruited via these channels. We derived a representative platform distribution based on independent, statistically significant channels to derive a weighted platform distribution.

As we have shown in our [Developer Segmentation report](#) there is no average developer: Our outcome-based segmentation model of eight developer segments shows that the choices and views of developers may vary wildly according to their desired outcomes in the app economy. Hobbyists, who just want to have fun, and Explorers, who are testing the app development grounds, think very differently as compared to professional app developers such as Hunters, who are after direct app revenues, and Product Extenders, who are using apps to promote their non-app products. We have therefore also weighted our results to minimize sampling bias for segment distribution across our outreach channels to derive a representative developer segment distribution.

By combining the regional, platform and developer segment weighting we were able to minimise sampling biases due to these

factors. All results in the report are weighted by main platform, region and developer segment.

distilling market noise into market sense

