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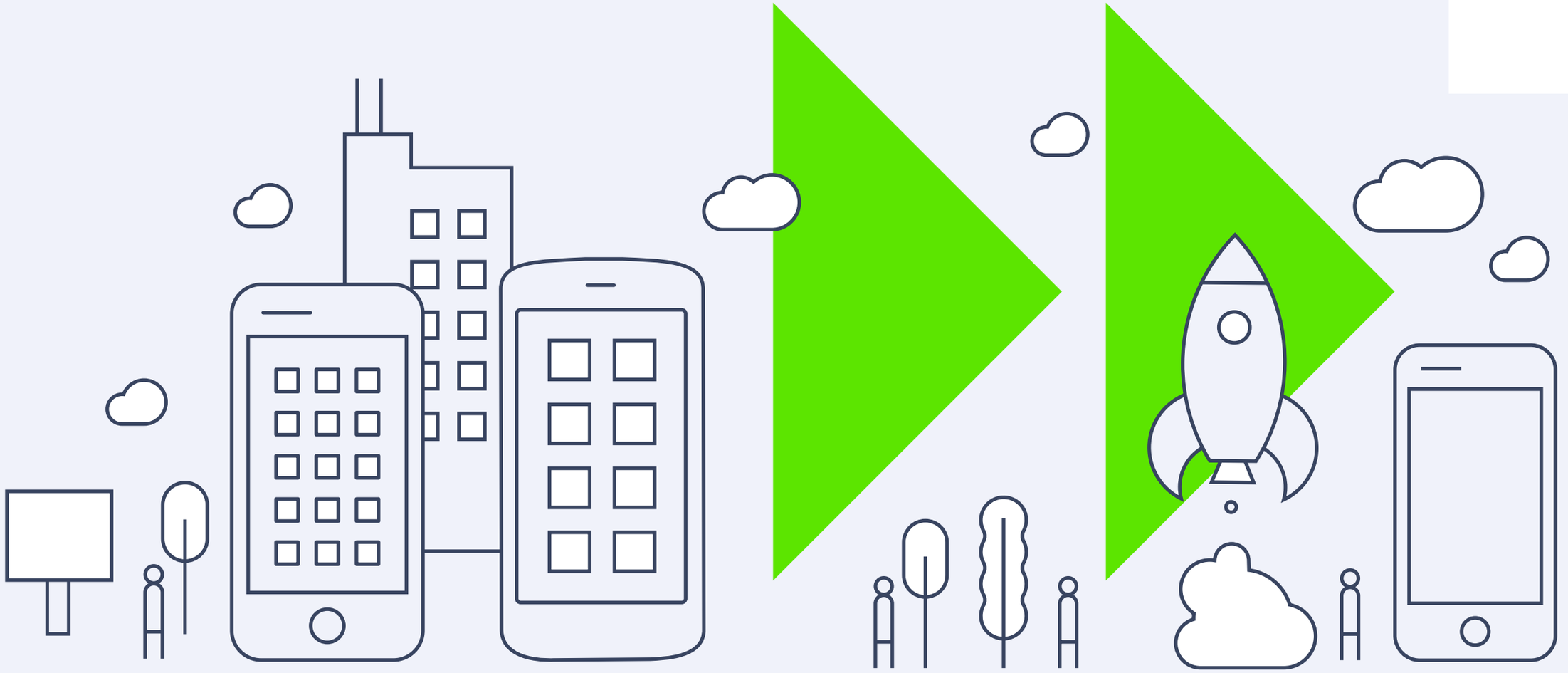

FLEXIBLE OPTIONS FOR FAST MOBILE APP DEVELOPMENT

Time to market, reliability and positive brand keys to commercial success

Survey Conducted by IDG Connect on behalf of Telerik, a Progress Company

in association with IDG CONNECT

IDG Connect is the demand generation division of International Data Group (IDG), the world's largest technology media company. Established in 2006, it utilises access to 38 million business decision makers' details to unite technology marketers with relevant targets from 137 countries around the world. Committed to engaging a disparate global IT audience with truly localised messaging, IDG Connect also publishes market specific thought leadership papers on behalf of its clients, and produces research for B2B marketers worldwide.

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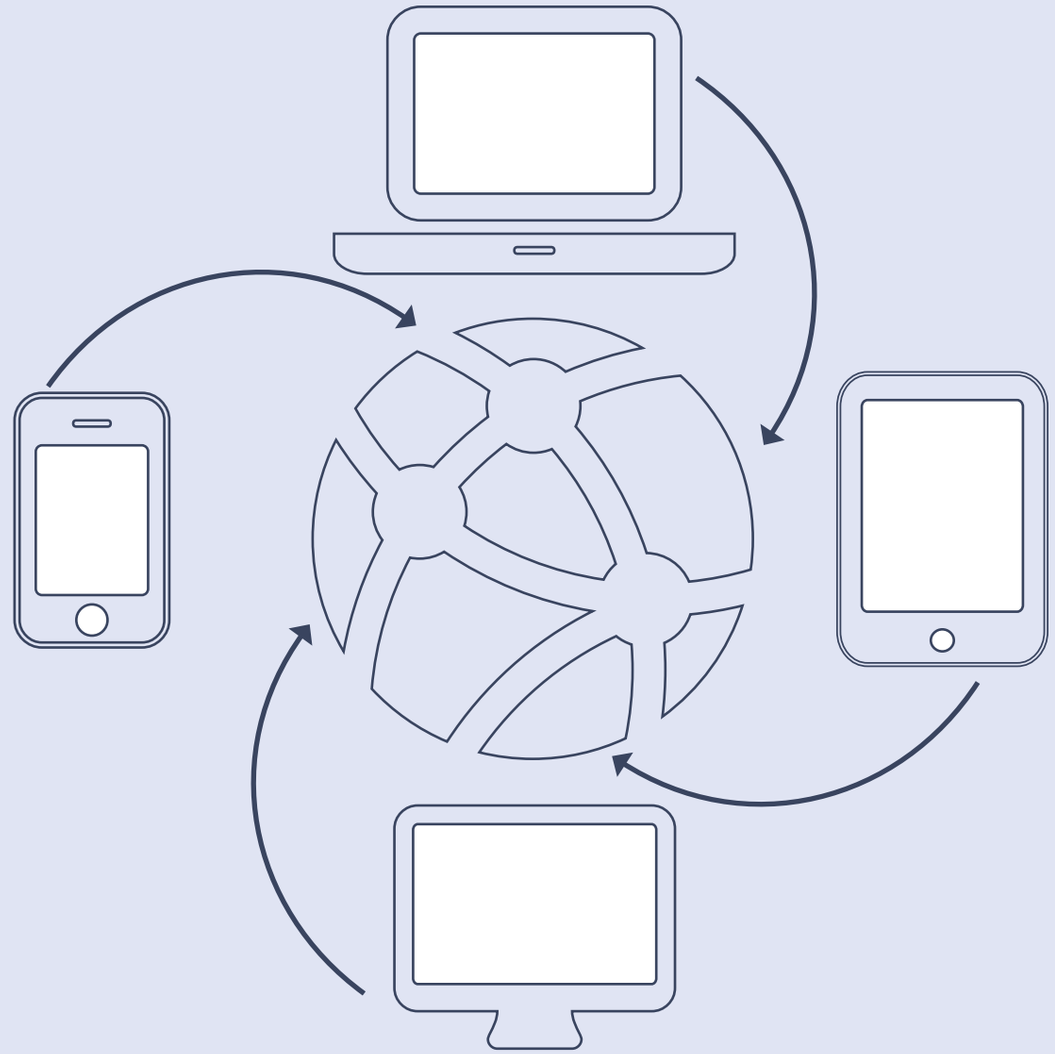

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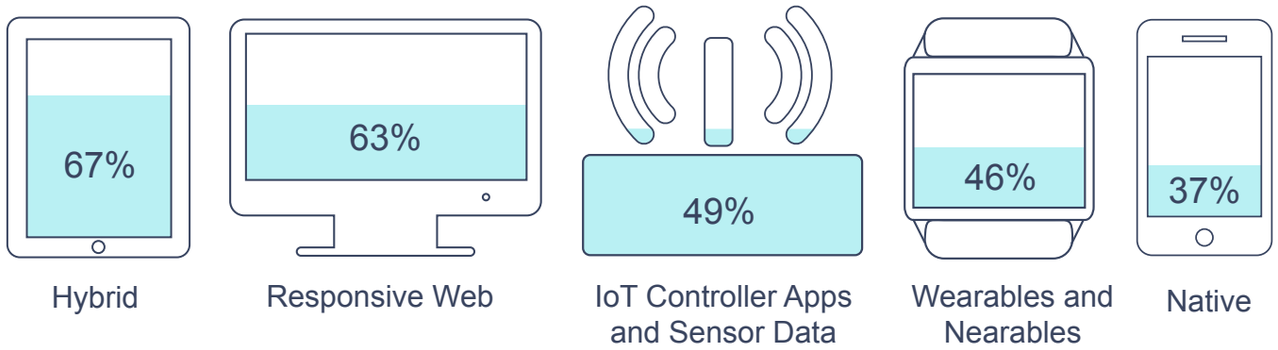
SUMMARY OF RESEARCH

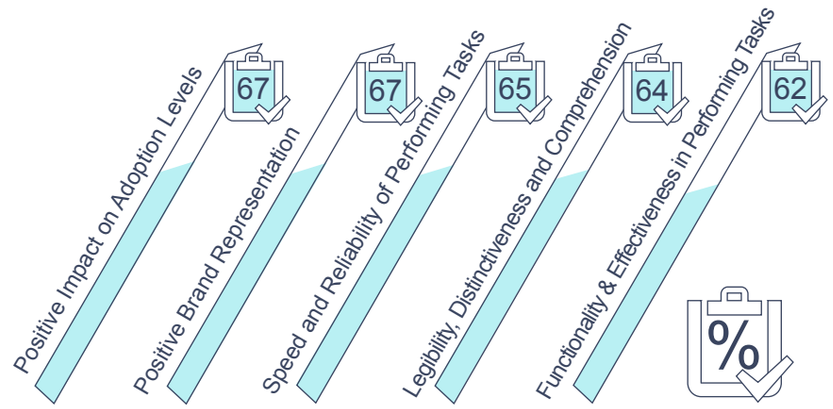
Hybrid and Responsive Web Mobile Apps Favoured

Fewer organizations focussed on developing hardware dependent software whilst IoT and wearable devices increasingly figure on roadmaps



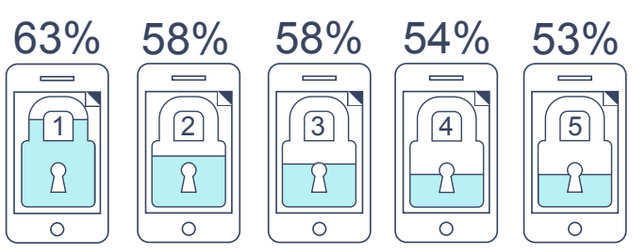
Fast and Reliable Mobile Apps Positively Correlated with Success

Compelling user interface and experience characteristics seen as vital to establishing presence in competitive markets



Mobile Security, Timely Delivery and Staff Resourcing are Focus of IT Leaders

Time to market, finding adequate resources and meeting line of business requirements all important but easier by comparison



1. Ensuring Mobile Security
2. Timely Delivery of Applications
3. Finding Resources for Mobile Development
4. Meeting Requirements of the Line of Business
5. Delivering Mobile Project On- Budget

INTRODUCTION

The clamor for good quality, innovative mobile apps from both consumer and business sectors is loud and getting louder. Many companies have embraced a ‘mobile first’ strategy that demands apps are available for employee smartphones, tablets and other devices even before desktop PCs and laptops, and a rush to download the next killer consumer app could emerge at any time, from any direction.

But while the size of the commercial opportunity before them is potentially huge, enterprise software developers face a range of challenges in designing and building mobile apps which stand out in a fiercely competitive market populated by both large, established software companies and agile start-ups. Nor is mass adoption of their wares guaranteed, often depending on how easy they are for people to use and how quickly developers can get them onto the market.

Platform fragmentation presents real headaches for software developers and software companies. Many have to be selective about which mobile operating system – whether Apple iOS, Google Android, Microsoft Windows Phone for example – they choose to build apps for because they lack staff with suitable cross-platform programming skills or the resources to implement coding alterations for the constant software updates which the operating system vendors push out.

The same is true for devices, with each utilizing different storage capacity, wireless connectivity standards, screen size and resolution, processing power and other embedded components which app developers must take into consideration if they are to avoid rendering or performance issues and optimize app functionality.

Different approaches to mobile app development – native, hybrid, responsive web or HTML5, for example – all come with their own advantages and disadvantages, and many software developers are understandably nervous about tying themselves in to one or the other to avoid limiting their potential pool of customers.

To get a better understanding of current attitudes and expectations, IDG Connect interviewed around 150 IT decision makers working for organizations engaged in mobile app development. Respondents were based in Germany, the Netherlands, the UK and the US, with all employing at least 1,000 people, and 77% employing up to 5,000. The majority worked as either IT directors or senior company executives with 23% identifying themselves as IT managers. The largest contingent (18%) hailed from the insurance industry followed by health, medical and pharmaceutical (13%) and finance (10%).

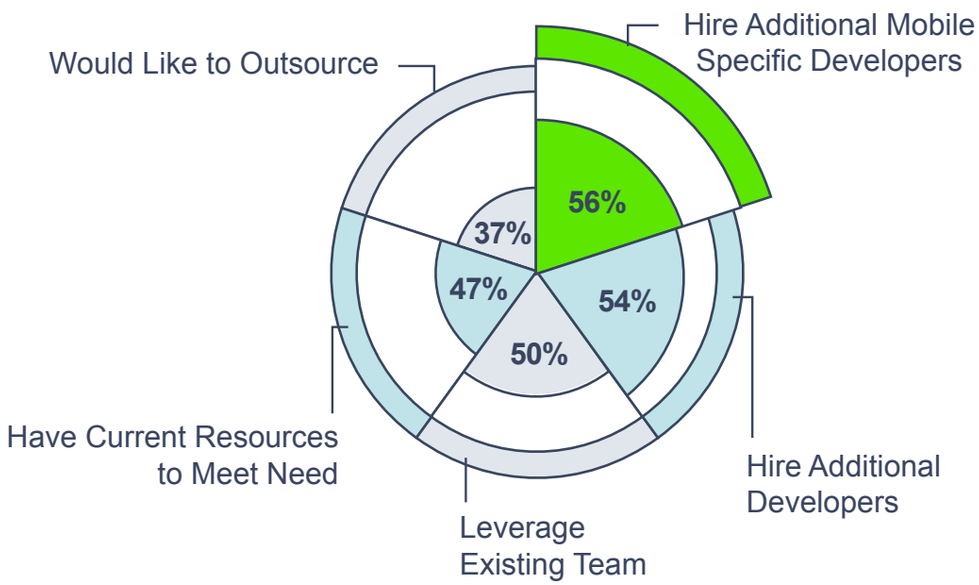
The responses provide a detailed picture of how companies across the four territories currently approach mobile app development, and offers insight as to where changes to the way they plan and manage the development process could help them overcome the challenges they face.

ORGANIZATIONS DIVIDED ON WHETHER THEY HAVE RESOURCES TO MEET APP DEVELOPMENT NEEDS

Organizations in Germany, the Netherlands, UK and the US are divided on whether they have appropriate level of resources to complete current mobile app development projects. On the one hand 47% reported that they have the resources to meet current needs and 50% said they would prefer to delegate responsibility to their existing teams.

This suggests that half are either happy with the operational capacity already in place and/or believe that in-house programmers have capacity to handle ongoing projects. But 54% also said they want to hire more developers, indicating that they do not have sufficient resources and are looking to supplement incumbent provision.

App Development Resources



The percentage of those who feel they have the current resources to meet that need is higher for larger companies employing more than 5,000 people (66%), compared to those employing less than 5,000 (42%) suggesting that they are more likely to have bigger in-house development teams.

It is IT managers specifically (51%) who are most likely to believe that they have current resources to meet needs. This number is much lower for C-level executives (36%) who may be frustrated at the time it takes projects to be completed by in-house teams.

With an almost equal number in favor of hiring mobile specific developers (56%) over non-specific developers (54%), many respondents appear to feel that knowledge and experience of JavaScript, HTML5, CSS3 and PHP for example are not unique to mobile app developers per se. Some may also consider that these skills can be acquired by non-specific programmers to meet business requirements and delivery deadlines that often fluctuate according to market demand.

Outsourcing mobile app development projects to third party software companies is still seen as the preferred option by over a third (37%). This finding was far more pronounced amongst senior managers and C-level executives (43%) than the IT managers (20%) however, who may fear time, budget and collaboration complications associated with trusting projects to external rather than internal developers.

HYBRID AND RESPONSIVE WEB ARE TOP OF MIND

A mixture of hybrid, responsive web and native mobile apps appear destined for a diverse array of hardware platforms which may include smartphones, tablets, notebook computers, wearable devices and Internet of Things (IoT) sensors.

On aggregate, two thirds (67%) of those surveyed want their organization's mobile strategy to support hybrid application development initiatives – typically those which use a mixture of web technologies such as JavaScript, HTML5 and CSS3 alongside native code for example.

This focus is marginally higher amongst US respondents (70%) compared to their counterparts in Europe (63%), with the latter preferring a purely native approach (46% vs. 32% for the US) to building downloadable mobile apps for installation and use on one particular platform, operating system or hardware device.

Yet 63% on aggregate (and again slightly more – 69% - in Europe alone) also want to support a responsive web approach to app development that creates a single web based app which can be accessed by multiple hardware devices using the same code.

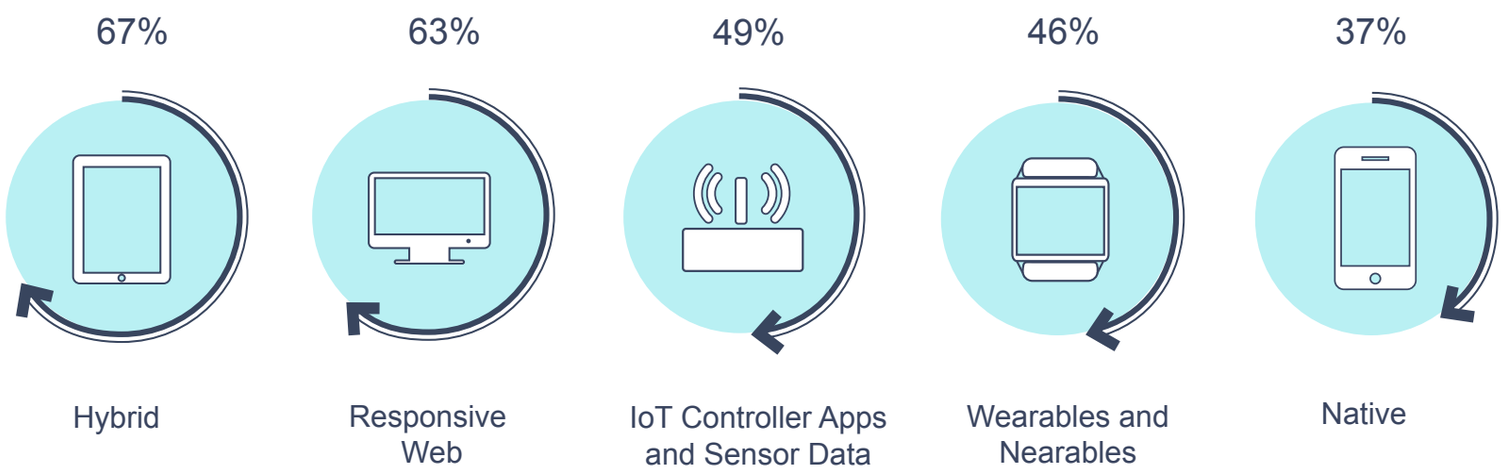
The number of organizations that want their mobile strategies to support native mobile apps appears low by comparison. But it is worth remembering that perceptions around separate development efforts and/or customized code requirements - and their associated cost and usability aspects - inevitably play a big part in any decision to tie those native apps to the specific capabilities of individual hardware devices. These concerns can be addressed by flexible development platforms that support cross platform and cross device native app development to a certain extent.

Almost half of those surveyed also said that they wanted Internet of Things (IoT) controller apps and sensor data supported in their mobile strategy. This illustrates the diversity and volume of new hardware form factors for which mobile app developers either already, or will soon, have to cater. This finding may be partly attributed to the large percentage of respondents in the healthcare, medical and pharmaceutical industry (13%) which is a current leader in the development and usage of IoT networks and applications.

However, those figures (34%) were much lower for large organizations employing over 5,000 people, indicating that smaller companies may be more agile and innovative when it comes to spotting new IoT market opportunities and are quicker in migrating their development focus to exploit them.

A similar picture emerges for wearable and nearable devices - examples of which include the Apple Watch or Samsung Galaxy Gear - and sensors or other components embedded in everyday items such as clothing that transmits data using short range wireless technologies like Bluetooth. These feature in the mobile strategy plans of 46% of all respondents across the four territories, but it is again the smaller companies (49%) who give them greater focus.

Device and Framework Support



80% PLAN FIVE OR MORE DEVELOPMENT PROJECTS OVER THE NEXT 12 MONTHS

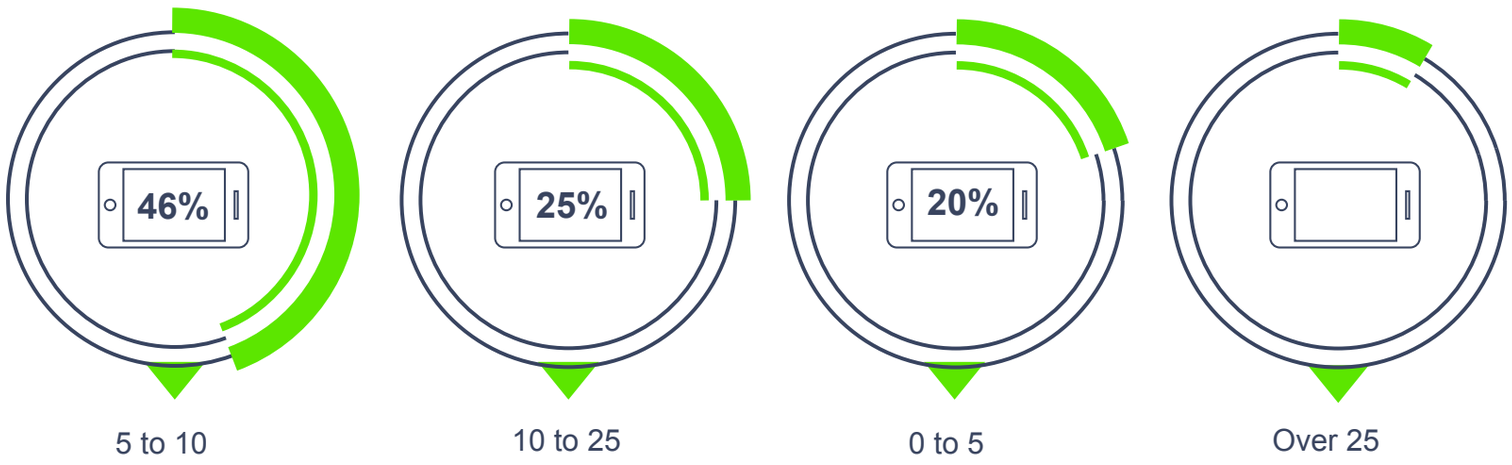
As discussed in Tab 5, it is clear that businesses across all four territories are engaged in a broad and roughly equal array of mobile app development projects. And in many cases this will require a sufficiently flexible strategical and technical approach to support a mixture of responsive web, hybrid and native apps.

Certainly lots of mobile app development activity is planned for the next twelve months, with 80% of organizations in Germany, the Netherlands, UK and the US preparing to initiate over five development projects and 34% planning to develop over ten projects.

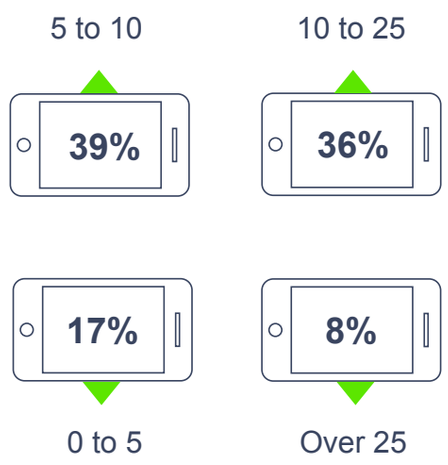
Significantly more companies employing over 5,000 people intend to build over 25 mobile apps that specifically require back end integration (20%). This reflects broader application integration requirements which are characteristic of larger organizations where the mesh of connected data repositories – which often include customer relationship management (CRM) and enterprise resource planning (ERP) software for example – tends to be much more complex.

There is also an indication that organizations in the US may be marginally busier than those in Europe. More companies in Germany, the Netherlands and the UK (26%) reported that mobile app development activity would be limited to less than five individual projects compared to the US (16%), while less in Europe (4% versus 13% for the US) also highlighted plans to build 25 or more.

Mobile apps planned...



...and those requiring back end system connectivity



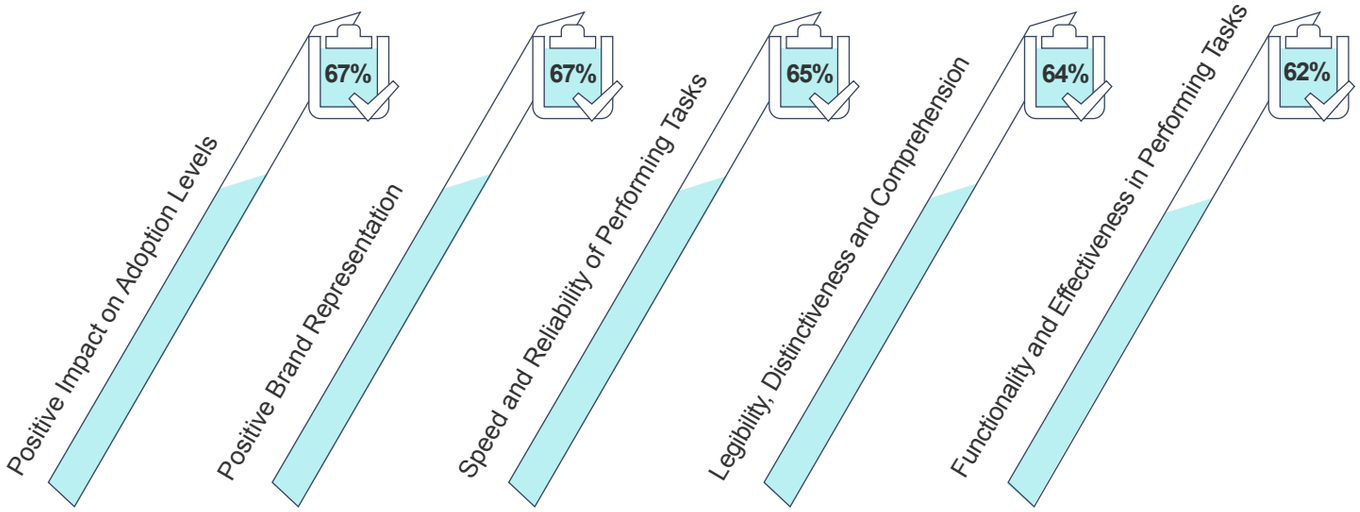
SPEED, RELIABILITY OF MOBILE APPS CORRELATED WITH SUCCESS

The survey gives a clear, universal indication of what organizations want from the mobile software they are currently developing or plan to develop in the future: namely fast, robust apps that do the job they are designed to do with the maximum efficiency and ease of use.

Regardless of how quickly apps are built and brought to market, if they do not provide a good user experience and have poor performance, it is very unlikely that they will be widely adopted. Nor will they create a positive brand association for the company distributing them, either externally for to consumers and business partners, or internally to their employees.

A compelling user experience is considered to have a positive impact on mobile app adoption levels and brand representation by 67% of the survey base. And 65% also equated user experience to other characteristics of mobile apps, including speed and reliability of performing tasks; legibility, distinctiveness and comprehension (64%); and functionality and effectiveness in performing tasks (62%).

User Interface/Experience Benefits



Those findings again varied only slightly between companies employing over or below 5,000 people. But larger companies did consider both functionality and effectiveness in performing tasks (26%) and a natural user-device interaction (11%) as the single most important characteristic attributed to good user interface experience compared to those employing 5,000 or less (14% and 3%). This suggests that some mobile apps may be destined solely for internal use by employees themselves and are not intended to be distributed or sold as commercial propositions – a situation which may inevitably put more emphasis on functionality and efficiency above honing or optimizing the UI for a wider audience.

Maintaining the good reputation of the IT department can be fundamentally important to businesses, especially those employing large numbers of employees which rely heavily on systems and applications to support their core working activities. Widespread use of internally developed mobile apps can significantly affect individual employee and collective business productivity, for example. And the ability to share feedback about application usage, quickly send out updates based on that feedback, and generally enable/enhance communication with customers/employees concerning app performance can help cement that reputation.

OPPORTUNITY TO SHORTEN APP DELIVERY TIME WITHIN MANY ORGANIZATIONS

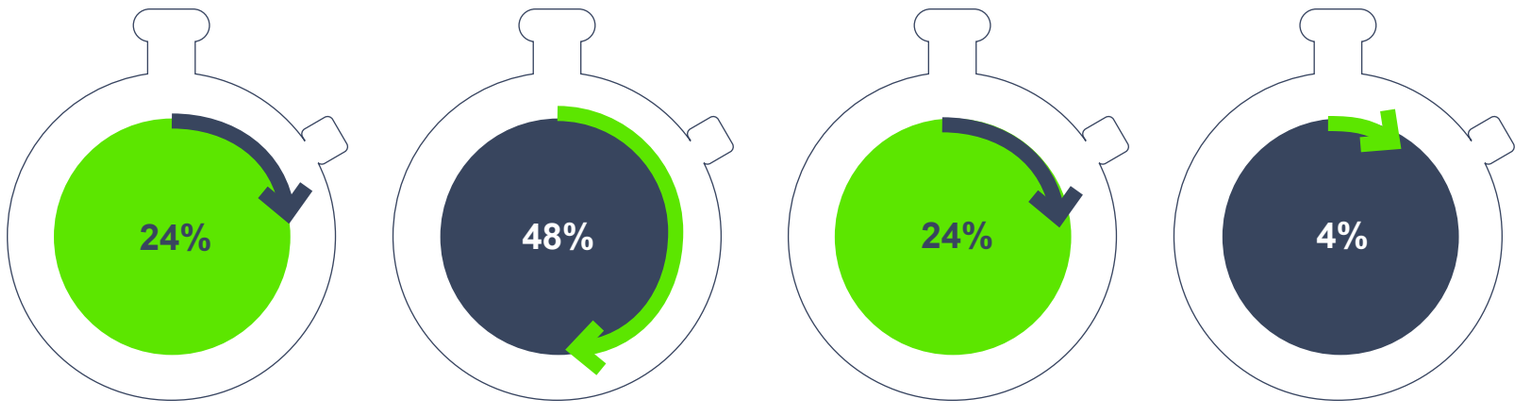
Overly long development lifecycles may severely disrupt time to market requirements in some cases and have a critical effect on the commercial success of any mobile app being distributed. Yet less than a quarter of organizations, on aggregate, complete mobile development projects within three months, and 28% take over six months to design, build and deploy new apps from start to finish.

Smaller organizations across Germany, the Netherlands, UK and the US which employ 5,000 people or less again appear more agile when it comes to mobile app development, completing 25% of their projects in less than three months compared to 17% of companies employing 5,000 people or more. Similarly, a higher number (31%) of larger organizations take between six and 12 months to complete a project compared to 21% for those employing less than 5,000 people.

Bigger companies are those more likely to have better staffed in-house development teams, and in many cases may also be more ambitious in the scale of the projects they tackle. At the same time, larger organizations may also encounter a greater degree of complexity in coordinating and managing development initiatives which involve close cooperation between different arms of the development team, senior managers and other business stakeholders.

Either way, it appears there may be opportunity within many organizations to shorten their development lifecycle and speed up time to market for new mobile apps by utilizing platforms that simplify basic development and optimization tasks while automating software debugging and testing processes where possible.

Project Lifecycles



SPECIALIST IN-HOUSE MOBILE AND WEB PROGRAMMERS UNDERTAKE MOST DEVELOPMENT PROJECTS

Most organizations prefer to use internal programmers for mobile app development. The majority of those surveyed (70%) said all application development is currently undertaken in-house and only 27% said that they outsourced it. Just 3% indicated that some, but not all, application development is farmed out to other providers.

This appears to indicate that almost all prefer to take an either/or approach rather than adopt an integrated strategy. This could see some elements of development work or specific coding projects handled by third parties and others processed by in-house programmers, perhaps due to cultural or strategic reasons but also because they lack suitable tools to aid effective collaboration and project management.

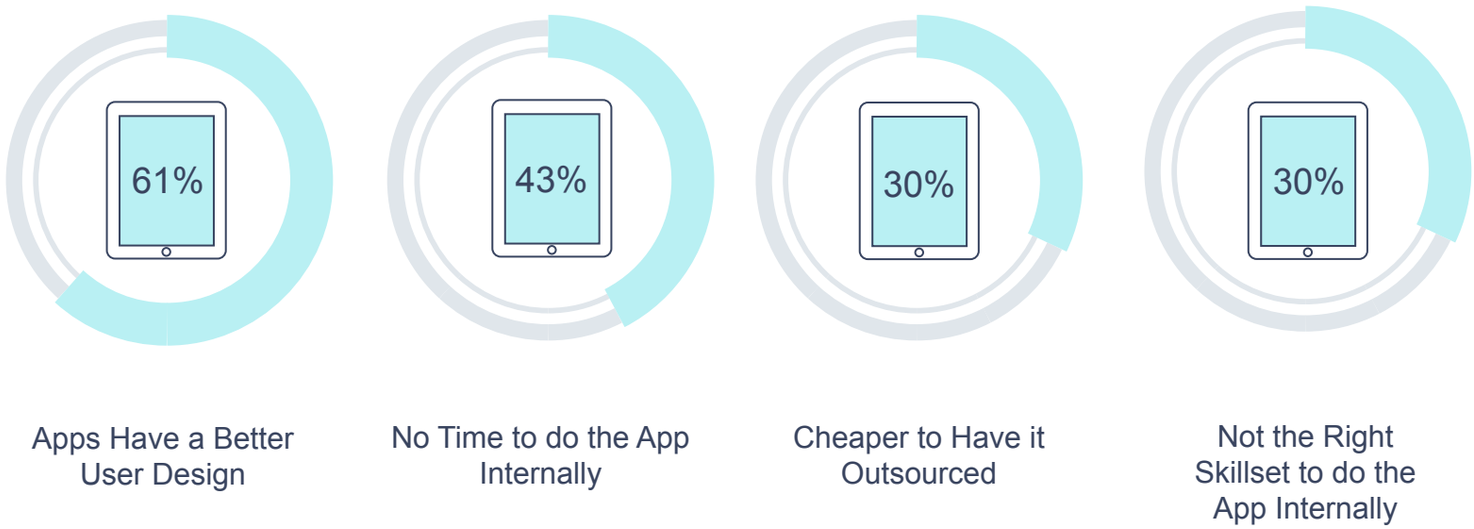
Organizations that outsource application development projects may feel that external software houses will do a better job on user design (61%). This may be tied to so many mobile apps being consumer rather than enterprise focused and therefore more reliant on compelling design as opposed to functionality. But it may also derive from in-house developers not possessing sufficient design expertise and/or not being given a sufficient amount of time to focus on design aspects specifically.

There are clear differences of opinion according to job role here. Whereas 75% of IT managers said that application development was outsourced to improve user design, only 39% of senior management thought this to be the case. And 39% of senior management also believe outsourcing to be a cheaper option, significantly higher than the aggregate figure across multiple job roles (30%).

Of those relying on their in-house programmers, most have either assembled a specialist team of mobile developers (69%), or trust their web developer colleagues to have the required skills in JavaScript, HTML5 and CSS3 or other mobile specific languages and coding frameworks to advance relevant mobile app projects.

Half (50%) reported that their organization enables business users rather than dedicated programmers, to build mobile apps. On the one hand, this finding may indicate doubts around the ability of workers without specific mobile app programming skills to complete development projects. Or, it could be that many organizations do not have development platforms which allow them to simplify app building with ‘low code’ or ‘no code’ tools.

Internal vs. External Development



COMPLIANCE GUIDELINES NOT UNIVERSALLY ENFORCED

The majority of organizations in Germany, the Netherlands, the UK and the US appear to set IT standards and guidelines for developers building mobile apps.

Over half (55%) of those surveyed by IDG Connect said that their organizations provided strict guidelines for their app developers. Those in Europe seem to be marginally more lenient in this respect (50%) and slightly more likely to let developers use their own standards (24% vs. 18% for those in the US).

C-level executives obviously keep a closer eye on compliance and some are worried that those guidelines did not control that compliance adequately (25% vs. 14% aggregate). This conclusion is probably more applicable to larger organizations which may be more likely to have formal compliance policies and/or a dedicated job function responsible for monitoring them.

The exact standards being applied to mobile app development projects may vary significantly from one company to another, however. Relevant guidelines that set minimum requirements around security, performance or user experience alongside management and workflow policy frameworks are likely to be defined by multiple factors. Rather than being tied to specific standards, developers require platforms which are sufficiently flexible to accommodate diverse options, including internal guidelines defined to match their own individual business requirements.

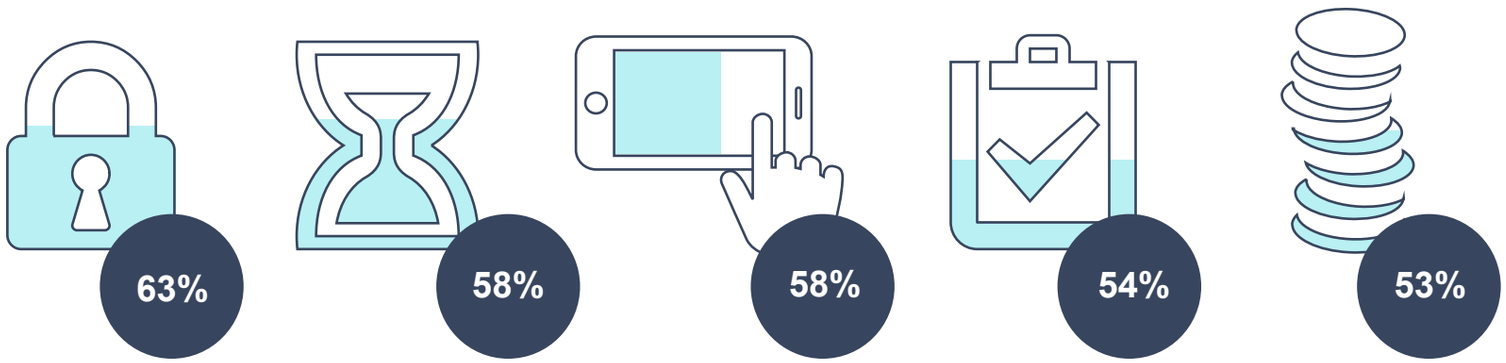
App Development Standards

MOBILE SECURITY, TIMELY DELIVERY AND STAFF RESOURCING ARE FOCUS OF IT LEADERS

Organizations face multiple challenges when it comes to building mobile apps for different devices quickly enough to meet business requirements and exploit market opportunities as they arise.

Of those challenges, ensuring mobile security was cited by the largest number of respondents overall (63%), and slightly more companies in Europe (70%). When then asked to pick the one factor they considered to be the single biggest challenge of all, ensuring mobile security was selected by 24% of the survey on aggregate and the scale and diversity of that mobile security challenge is set to expand further as more organizations build apps which utilize IoT connected sensors, wearable and nearable devices.

Delivery Challenges



But locking down mobile security is by no means the only challenge currently encountered, or prioritised. Finding the resources to build mobile apps quickly enough to exploit market opportunities and/or meet internal time lines were cited by 58%. This echoes earlier findings which suggest 76% of organisations struggle to complete projects in less than three months (Tab 8) while 53% doubt whether they have sufficient resources to meet individual project requirements (Tab 4).

Meeting requirements of line of business is also an issue for 54% of organizations, additionally highlighted as the single biggest challenge to successful mobile app delivery by 14% of the survey base. IT managers in particular appear to struggle here, with 29% identifying it as the single biggest challenge.

This suggests there may be lack of clear communication between senior management and IT concerning the alignment of goals within the business units. It also suggests that business managers and IT may have differing viewpoints on in-house development capabilities versus outsourcing, as supported by previous findings in the survey.

CONCLUSION

Organizations in Germany, the Netherlands, UK and the US are divided on whether they have appropriate levels of resources to complete current mobile app development projects, often coming up against challenges around security implementation, staff allocation and meeting tight completion deadlines and other line of business requirements - less than a quarter complete mobile development projects within three months and 28% take over six months to design, build and deploy new apps from start to finish.

They are engaged in a broad array of mobile app development projects, producing a mixture of responsive web, hybrid and native apps which appear destined for a diverse array of smartphones, tablets, notebook computers, wearable devices and Internet of Things (IoT) sensors.

Most organizations rely on internal programmers for mobile app development projects, who are either specialist mobile developers, or non-specialist web developers with appropriate JavaScript, HTML5, CSS3 or other mobile specific languages and coding skills. Half currently enable business users rather than dedicated programmers to build mobile apps.

The majority appear to set IT standards and guidelines for developers building mobile apps to follow, while those that outsource projects often do so because they feel that external software houses will do a better job on user design.

Time to market is critical for mobile apps, and developers need to evaluate which tools and platforms can help them streamline development lifecycles and speed up project completion if they are to ensure commercial success.

Delivering the best end user experience is likely to win friends and foster greater adoption amongst customers, business partners and internal staff alike, and a finely honed user interface will be a key aspect of competitive differentiation for mobile apps in the next few years.

Developers need to take a long, hard look at the internal resources available to them and consider whether or not they are making best, most cost effective use of available skills and expertise. External software houses may be better placed to handle UX design for example, so leveraging solutions that make it easy to build a compelling user experience without UX design expertise may prove a good option. And in many cases any shortage of in-house developers can be circumvented by using simple programming tools which allow ‘no code’ or ‘low code’ business users to build their own apps.

As the volume and diversity of mobile devices continues to grow, customers will inevitably discover new ways to use them. The Internet of Things (IoT) and a new generation of wearable/nearable devices are potentially huge opportunities for mobile app developers, but they will need to keep their options open in terms of the operating systems and devices they target.

Platforms which support a broad array of hybrid, responsive web and native app development projects to cover all the bases and handle different approaches to compliance, standardization and requirements policies may prove a wise investment which individual organizations and software development teams should carefully evaluate on a case by case basis.