

# TEST STUDIO MOBILE:

First Stop on an Ambitious Roadmap  
for Mobile Test Automation

## Introduction

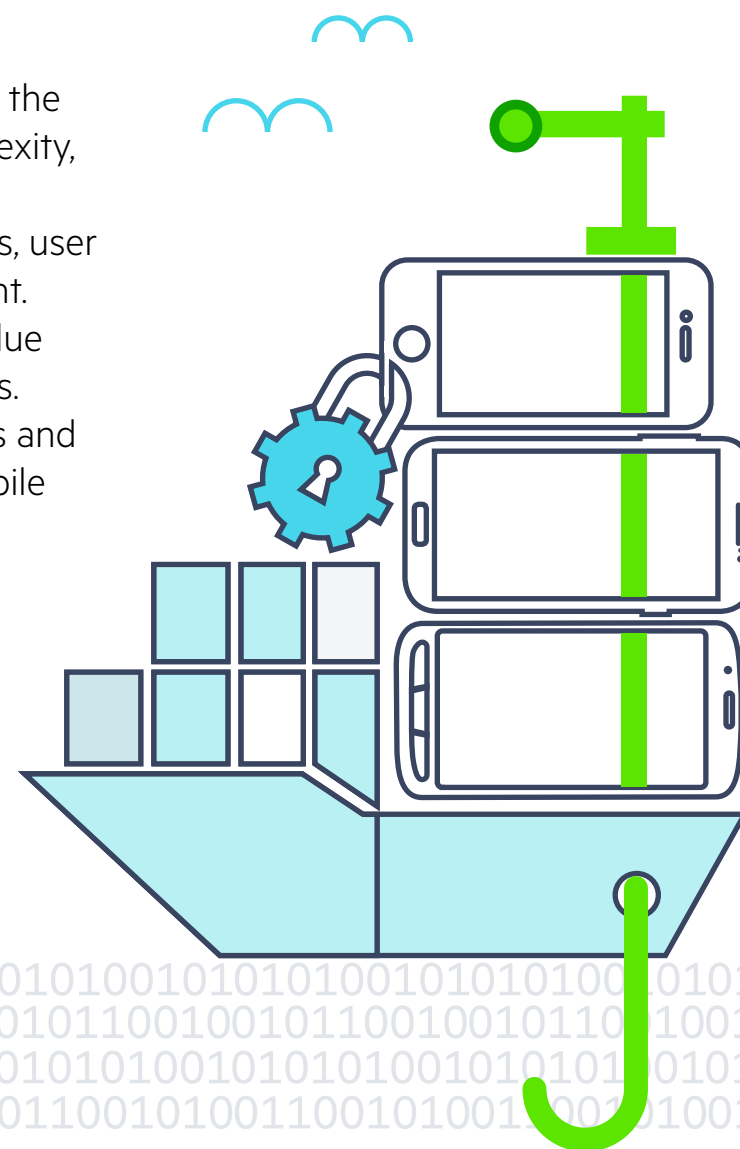
Information technology analysts predict that, in 2015, mobile tablet devices will overtake the PC in unit sales once and for all. Virtually every enterprise in the industrialized world that supports its own software development has made at least some commitment to mobile.

While mobile application development is experiencing explosive growth, a crucial component of the development and deployment process is at an earlier stage of evolution: mobile testing.

**Shipping error-free code is essential in securing adoption of mobile apps**, whether they are mission-critical business tools used by hundreds or thousands of enterprise employees, or simple, popular apps deployed through the Apple or Android app stores to millions of consumers. QA has the same objectives in both of these testing scenarios:

- **Functional Testing:** Does the app access the data, execute functions and provide the user experience required by the business, on all platforms?
- **Performance:** Is the app fast and responsive, and does it complete every transaction, on all devices?
- **Load:** Can the app handle enough traffic to meet the consumer or business requirements?

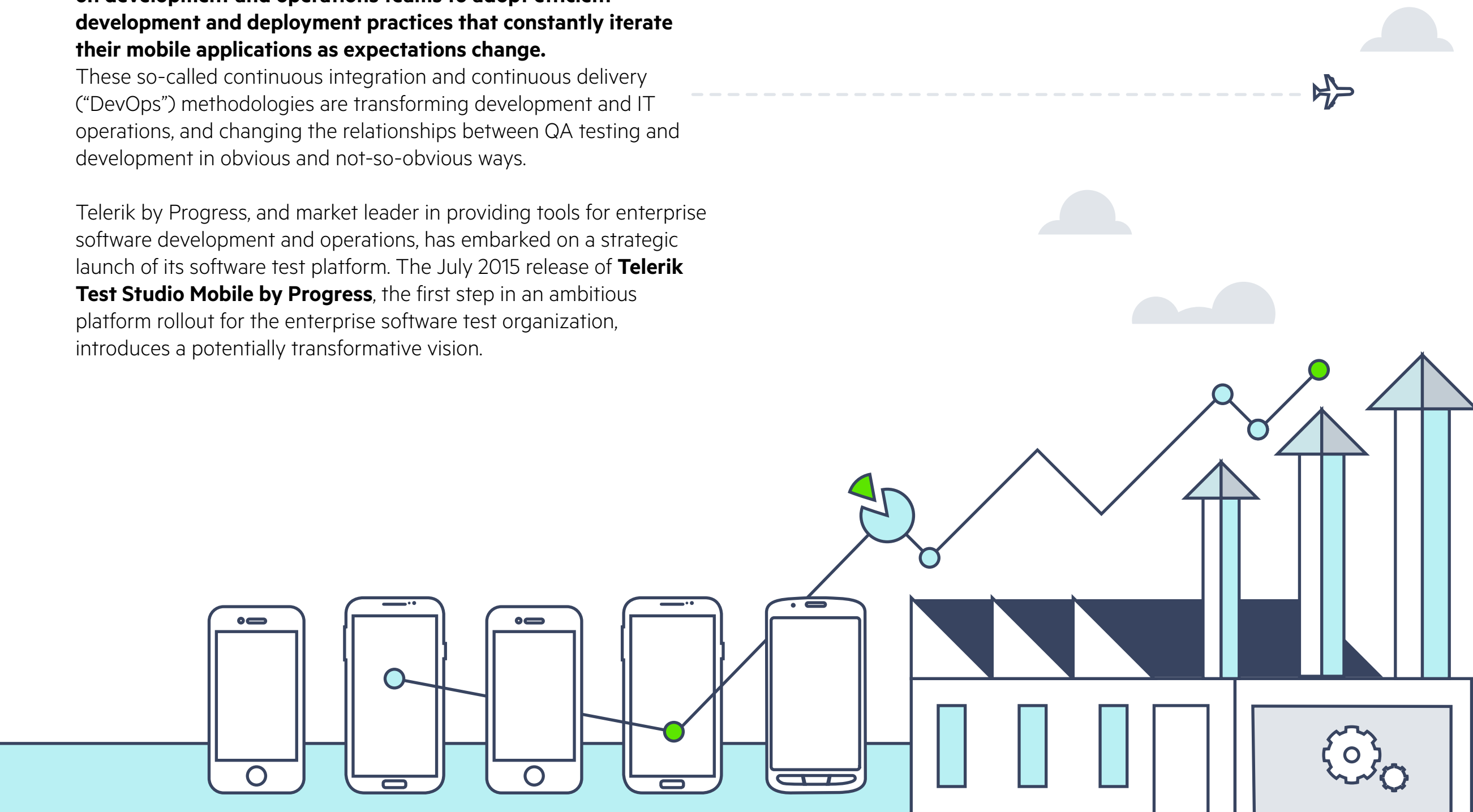
Development organizations just now moving into the mobile world are discovering new levels of complexity, given the diversity of software and hardware configurations, networks, devices and form factors, user “gestures” and coded objects used in development. Applications are being released without testing, due to aggressive go-to-market and release schedules. Many businesses lack the testing specialists, tools and consistent methodology needed for effective mobile development and testing procedures.



**Rapid change in the mobile market is putting pressure on development and operations teams to adopt efficient development and deployment practices that constantly iterate their mobile applications as expectations change.**

These so-called continuous integration and continuous delivery (“DevOps”) methodologies are transforming development and IT operations, and changing the relationships between QA testing and development in obvious and not-so-obvious ways.

Telerik by Progress, and market leader in providing tools for enterprise software development and operations, has embarked on a strategic launch of its software test platform. The July 2015 release of **Telerik Test Studio Mobile by Progress**, the first step in an ambitious platform rollout for the enterprise software test organization, introduces a potentially transformative vision.



Test Studio Mobile incorporates the best aspects of test automation functionality that have made the original Test Studio solution a mainstay in web and desktop application testing, and introduces them to the mobile testing field.

**This release will provide practical efficiencies that will help organizations save time and development dollars, improve time to market and enhance app quality and end-user satisfaction.**

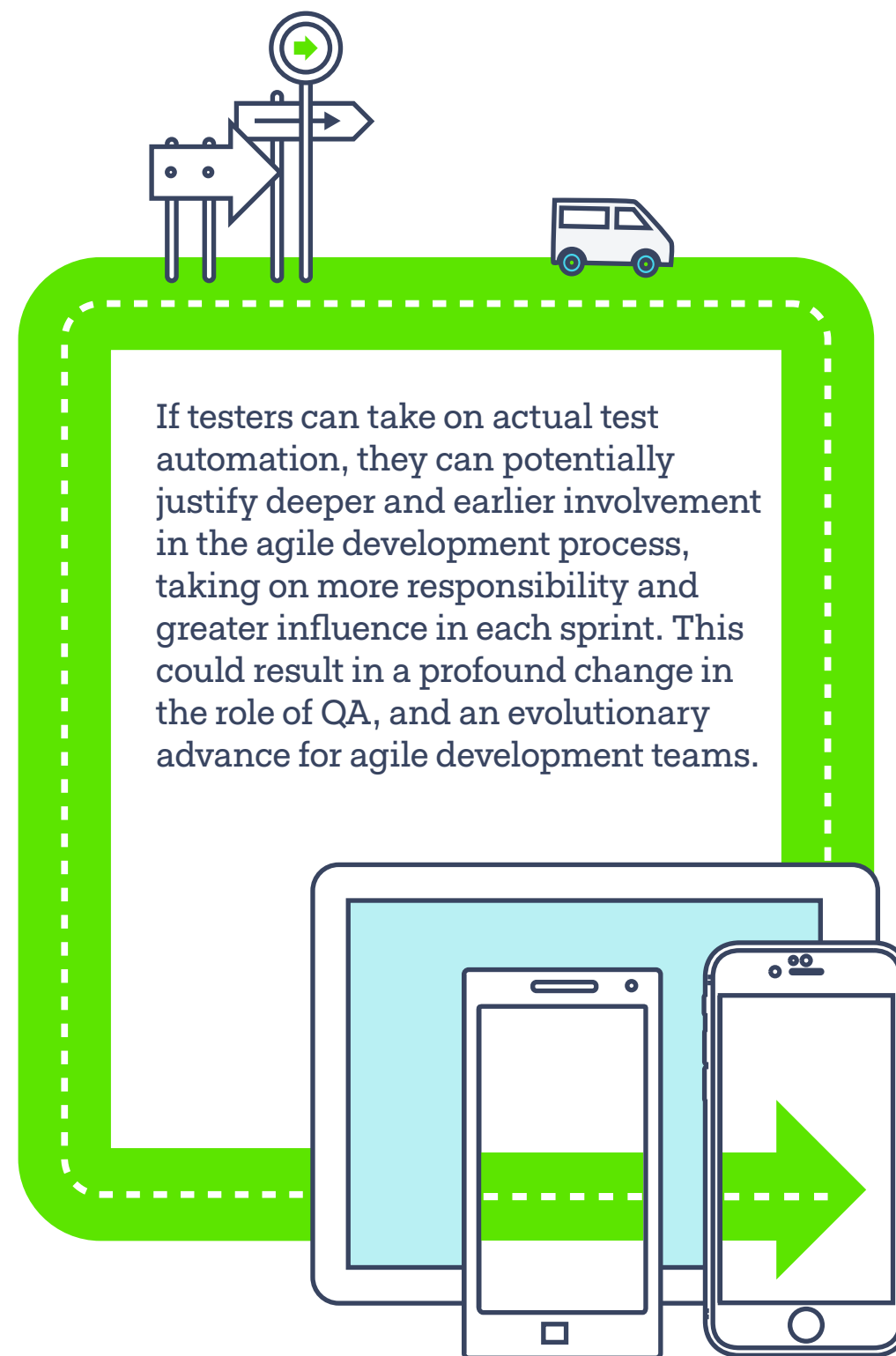
These benefits flow from the ability to automate test cases, reuse objects, elements and recorded gestures for ease of replication from one test case to the next.

**But beyond these pragmatic efficiencies, the Telerik strategy for test, embodied in this and future releases of Test Studio Mobile, has the potential to fundamentally change the relationship between developers and testers. More specifically, it may change the way testers and developers collaborate, especially within agile teams.**

Simply put, this platform is designed to simplify the development of test automation to the point where most QA testers, even those without formal software development qualifications, can participate directly not just in writing and executing test cases but in creating test automation—a task most enterprises now reserve for developers. Mobile test teams have long relied on coded test solutions, in which developers manually code test automation. Test Studio Mobile enables test automation using the record/playback technique familiar to web and desktop test teams, enabling creation of test automation, *without coding*.

Test Studio Mobile is geared toward the tester and the developer, with a specific aim to enhance their collaboration.

Test Studio Mobile is the key feature for the July release, to be followed by an important second release in October 2015. But these two releases represent the launch of a significant strategic vision.



## Mobile Testing Challenges

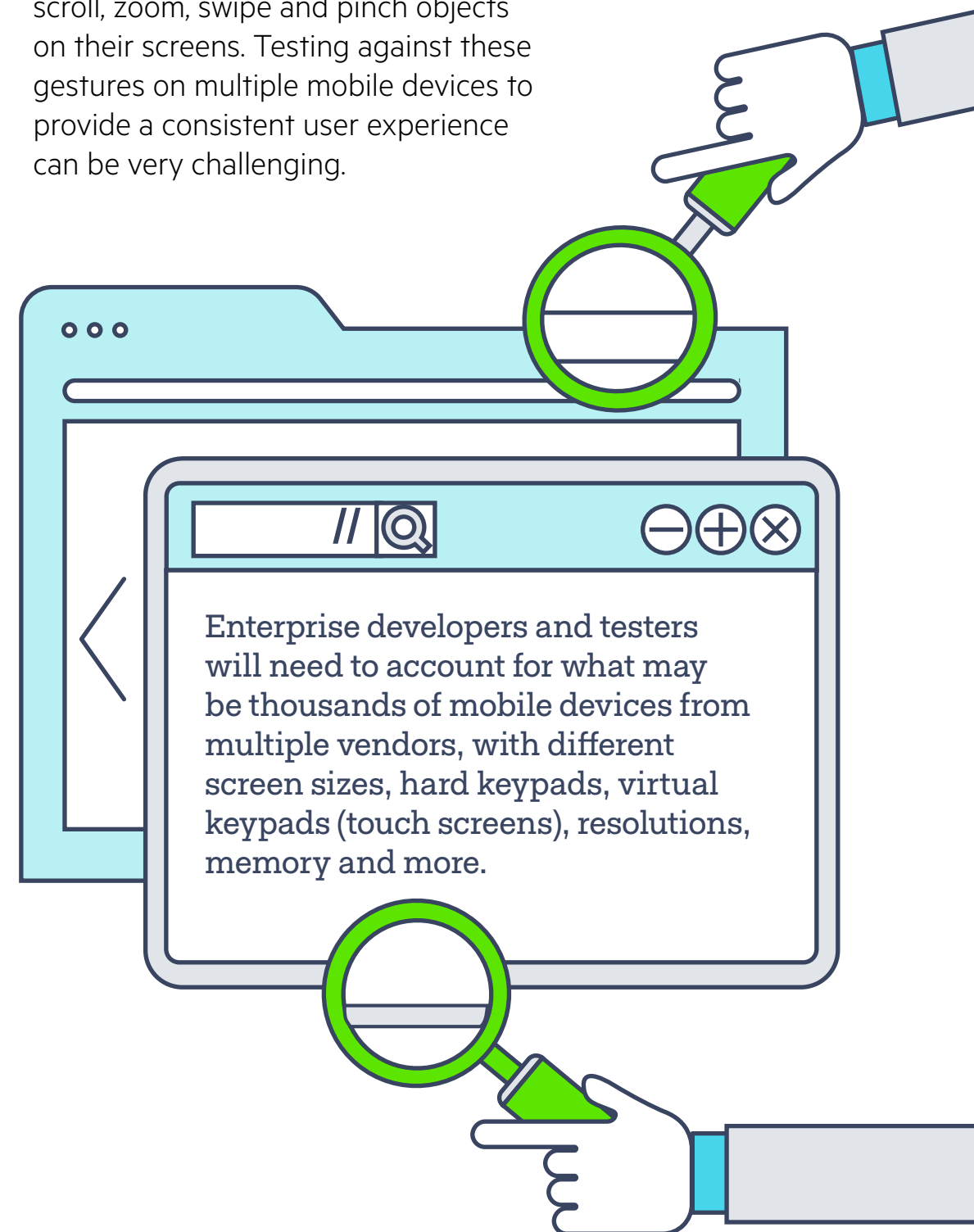
Mobility is a departure from the standard enterprise development strategy. For testers, the move to mobile apps introduces an entirely new level of complexity.

- **Hardware and software configurations:** Testing must account for multiple operating systems. While many enterprises have attempted to limit the scope of software releases to iOS and Android, any organization embracing Bring Your Own Device (BYOD) as a support commitment may find itself supporting various versions (iOS 5.X, iOS 6.X, Android 4.x, Android 5.x), along with Windows and Blackberry devices. Ultimately, wearables, such as the Apple Watch, may present their own complexities, even though gestures are the same, the UI may be completely different.

On the hardware side, enterprise developers and testers will need to account for what may be thousands of mobile devices from multiple vendors, with different screen sizes, hard keypads, virtual keypads (touch screens), resolutions, memory and more.

- **Type of applications:** The distinctions are subtle between native, hybrid and mobile web. Often, the tester does not know whether the mobile app he is testing is native or hybrid, and he may not consider the distinction relevant. Many organizations now have a mixture of native and hybrid applications, and still are searching for a way forward for their developers. Although the difference may not be obvious to the testers, it is important to ensure that the organization's chosen testing platform can accommodate both currently or, at least, in its roadmap.
- **Network and device challenges:** Devices move data on multiple types of networks (GSM, GPRS, Wi-Fi, Wi-Max and so on). It is difficult to predict the speed of data transfer when the user has connectivity. Testing also must assess the way the application handles situations when the user loses connectivity and then reconnects—a frequent occurrence for mobile users. Another critical scenario is how the app recovers when the device itself runs out of battery power.

- **Gestures :** Mobile users constantly tap, scroll, zoom, swipe and pinch objects on their screens. Testing against these gestures on multiple mobile devices to provide a consistent user experience can be very challenging.

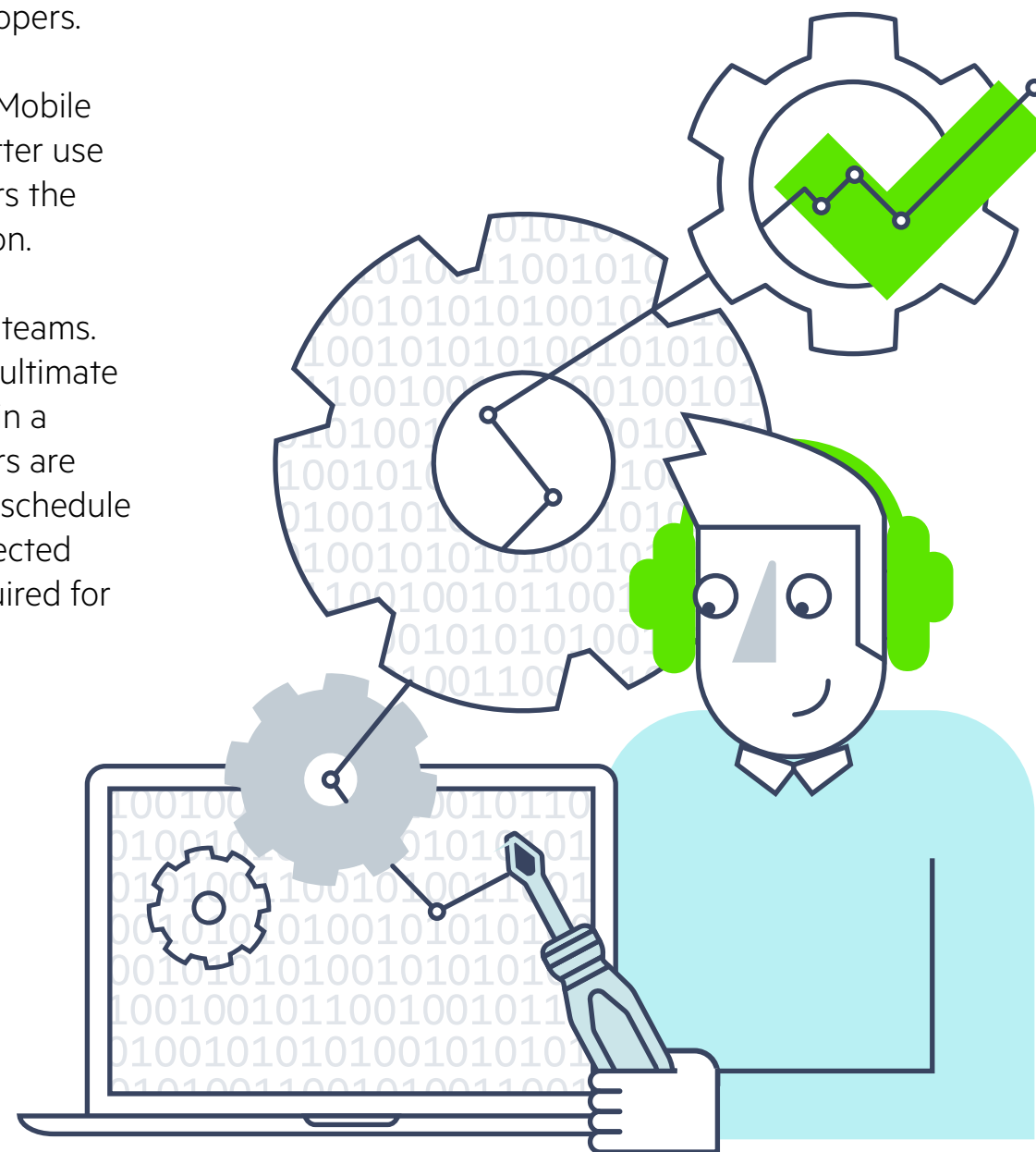


Enterprise test teams typically have depended heavily on a “device cloud,” a service allowing developers to test their apps on hundreds of actual physical devices via the cloud. The cloud provider takes the burden of owning and maintaining the devices, constantly updating them and maintaining that huge overhead entirely off the developer. As essential as this service is to deal with the diversity of mobile devices that must be supported, it does not address the design of the test itself. Many enterprise teams still develop tests manually, but it is increasingly obvious that **manual testing is too laborious for mobile.**

One of the biggest challenges in test—and this is an important reason test organizations are still testing manually in the mobile space—is test automation requires fairly sophisticated development skills. Most testers who use tools such as Test Studio solution were not hired as developers. With Test Studio Mobile, they have the opportunity to get to the next phase of automation, without having to write too much code. In Test Studio Mobile, they have the opportunity to acquire a suite of tools to help them get to the next phase of automation, without having write too much code.

Test Studio Mobile offers a simple, friendly medium for test development by less technical testers, who know how to create tests, and who know how to break the application and won't hesitate to do so. These people ideally should be writing the tests in collaboration with developers.

The new release of Test Studio Mobile enables agile teams to make better use of the testers' skills, giving testers the opportunity to design automation. Testers often are intimidated by developers, especially on newer teams. The development team has the ultimate control of the release cycle, but in a best practice scenario, the testers are ideally positioned to dictate the schedule for testing—essentially the projected launch date minus the time required for development.



## Key Functionality in the Release

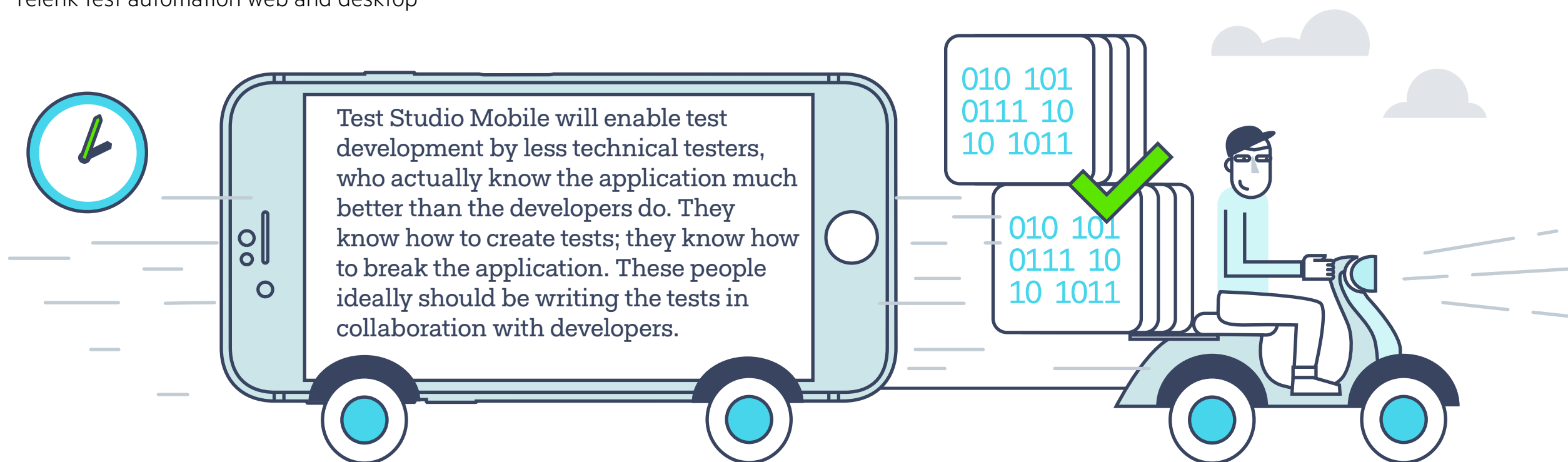
Many test managers already know how to use Test Studio solution. The new release leverages the same recording and playback functionality, but for mobile testing. The application needs to be instrumented with a new plug-in, and the tester needs to connect that device to Test Studio Mobile. After setup, the product experience is similar to that with Test Studio solution—**it is all about ease-of-use and collaboration.**

The fundamental value in Test Studio Mobile is in the ability to run automated tests on real devices as well as emulators, without writing a line of code, using the record-and-playback technique already familiar to users of the Telerik test automation web and desktop

application development tools. A tester without development depth can create the test and run it on multiple devices. The July release makes this capability available for native iOS; support for test automation in Android is scheduled for the October release.

IOS is a complex environment for testing. It is necessary to embed a plug-in into the application under test that says this is okay for another application to drive. The developer must do this, as well as create a debug build of the Android or iOS mobile app and supply that to the test team. The test team then deploys that build through iTunes to the device, using Test Studio Mobile to instrument it.

Test Studio Mobile allows the developer or tester to create test automation for essentially any app on iOS, but is even easier for native apps built using NativeScript on the Telerik Platform. Telerik Platform developers seeking to test a just-built app can simply click **Testing**, and download Test Studio Mobile. Telerik will auto-instrument the app with a plug-in. It instruments, and then the user saves an ITK file. Then, he or she can deploy the app to the device for testing.





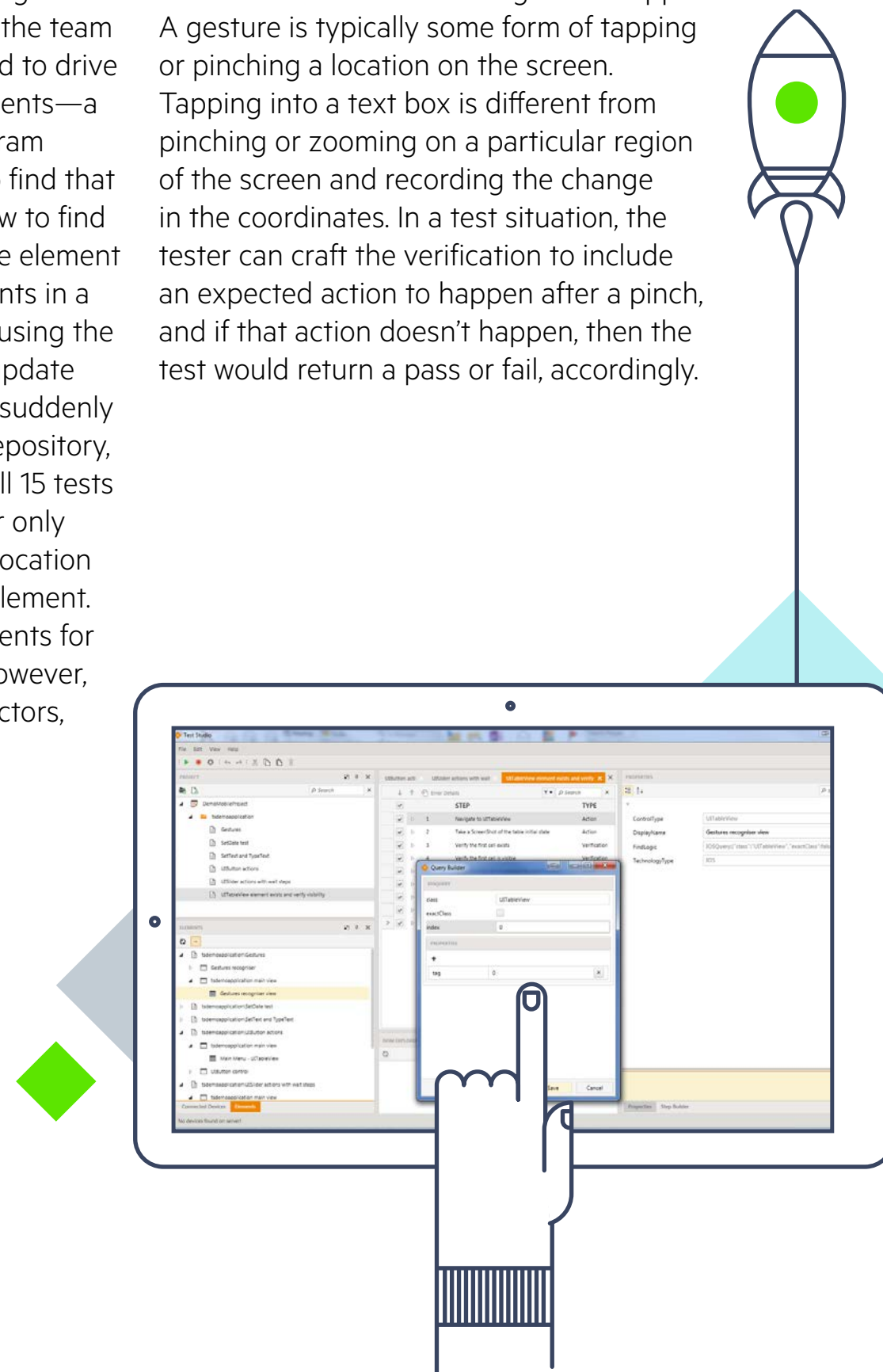
## Object Recognition

The developer writing code to automate testing needs to understand the identification logic used to find a particular element, such as a text box, a button or a grid element. Test Studio Mobile can make suggestions about this choice. Anytime the developer uses an element in test, Test Studio Mobile will automatically record what it deems to be the best find logic to locate that element. It allows the user to edit it after the fact. Telerik previously has offered this capability in its web and desktop application testing product—it is the heart of the recording and playback solution—but it is new for mobile development in this release.

With record/playback, the equivalent might be to pick up the device and tap on the button. In the code generated by the recording process, it says, “buttonOne.tap.” **The system adds that automatically, and there is no need to worry about how button one is found, because the tool contains its own identification logic.** So not only did it create the action, it added the identification logic to find the element on which it needs to perform the action. The Telerik **Element Repository** is

essentially a time-saving tool for longer-term test case maintenance. When the team is automating tests, everything used to drive that automation is founded in elements—a button or a text box. The test program needs to know, for example, how to find that button to simulate tapping it, or how to find a text box and enter text into it. The element repository stores all of these elements in a safe, accessible area. If 15 tests are using the same text box, a developer might update the identifier for that text box, and suddenly 15 tests break. With the Element Repository, the user does not have to go into all 15 tests and update that identifier. The user only needs update the identifier in one location to update all 15 tests that use the element. (Still, there would be different elements for iOS and Android. For a given OS, however, for all different devices and form factors, each element is the same.)

Test Studio Mobile includes gesture support. A gesture is typically some form of tapping or pinching a location on the screen. Tapping into a text box is different from pinching or zooming on a particular region of the screen and recording the change in the coordinates. In a test situation, the tester can craft the verification to include an expected action to happen after a pinch, and if that action doesn't happen, then the test would return a pass or fail, accordingly.





## Collaboration and the Role of the Developer

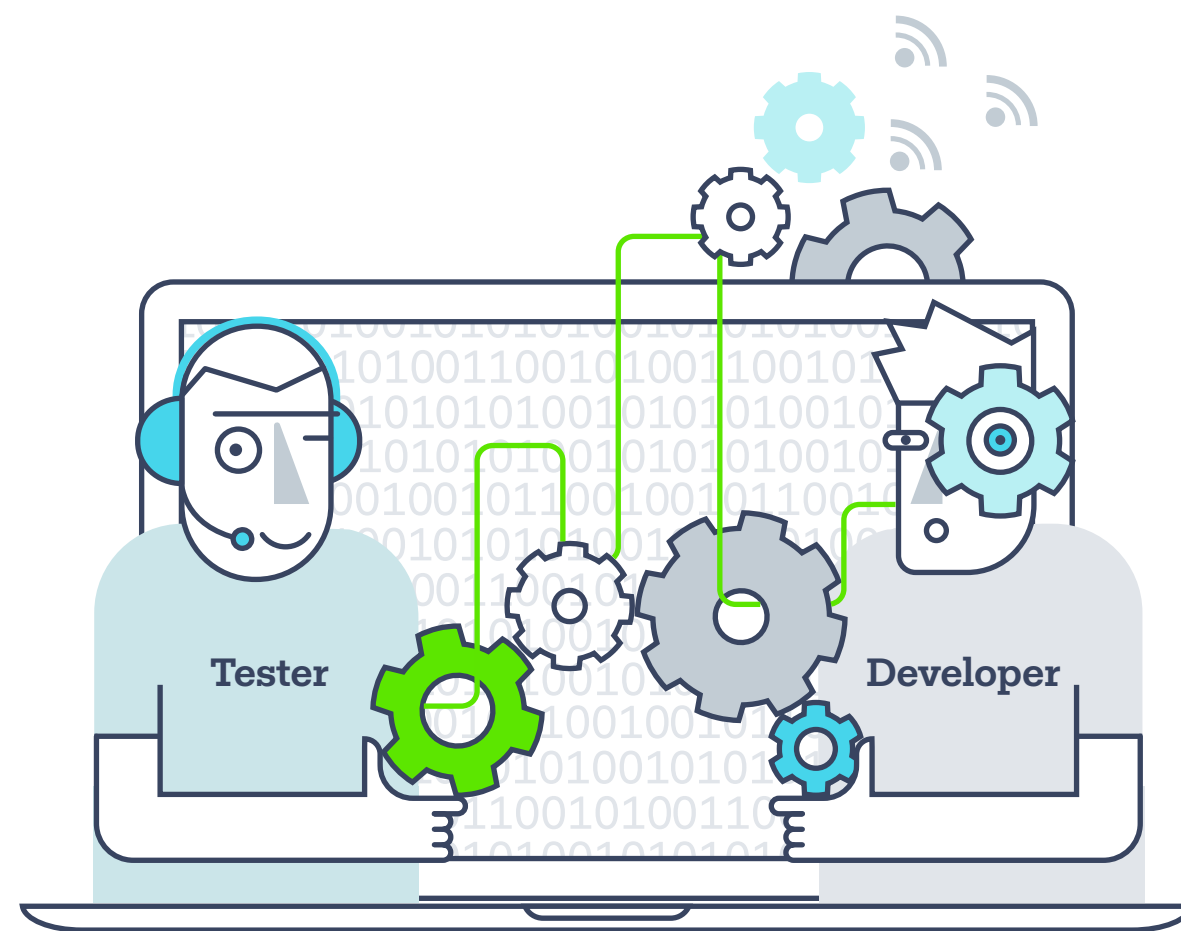
Enterprise development teams commonly have QA groups made up of less technical testers and developers. **How do they all work together to be as productive as possible?** How does a development manager ensure that developers are building product functionality and not test cases?

Many of the more traditionally run development shops are adopting test automation, but only giving testers the responsibility for writing test cases; they are not empowered to write the actual code for test automation. But this is changing, and products such as Test Studio solution are providing the collaboration tools to drive this kind of evolution.

While the traditional hierarchy, which places developers above testers in authority and responsibility for the agile process, has served many enterprises reasonably well, limiting the tester's role to writing the test cases has become an artificial limitation. With the right tools, testers can create test automation, then more technical resources can be solidifying find logic or making slight alterations in code that make those tests a lot more durable long-term—in other words, less brittle.

In many organizations, development teams give testers an application one day before the intended release. They may say, "Here, test it. If there are any big issues, let us know right away. Everything else will get fixed in the next release." Such a scenario is not empowering for testers; it is barely a collaborative environment at all.

In some cases, testers may be responsible not just for test cases but for user stories. A test team with a strong voice may be able to say, "In this sprint, we need some user stories for test automation. And if this is a two-week sprint, and we're looking at two weeks of engineering work, we have to make room for our user stories for test." They may even be able to influence development to defer an additional engineering feature to the next sprint, because including it in the present sprint will have an impact on testing.



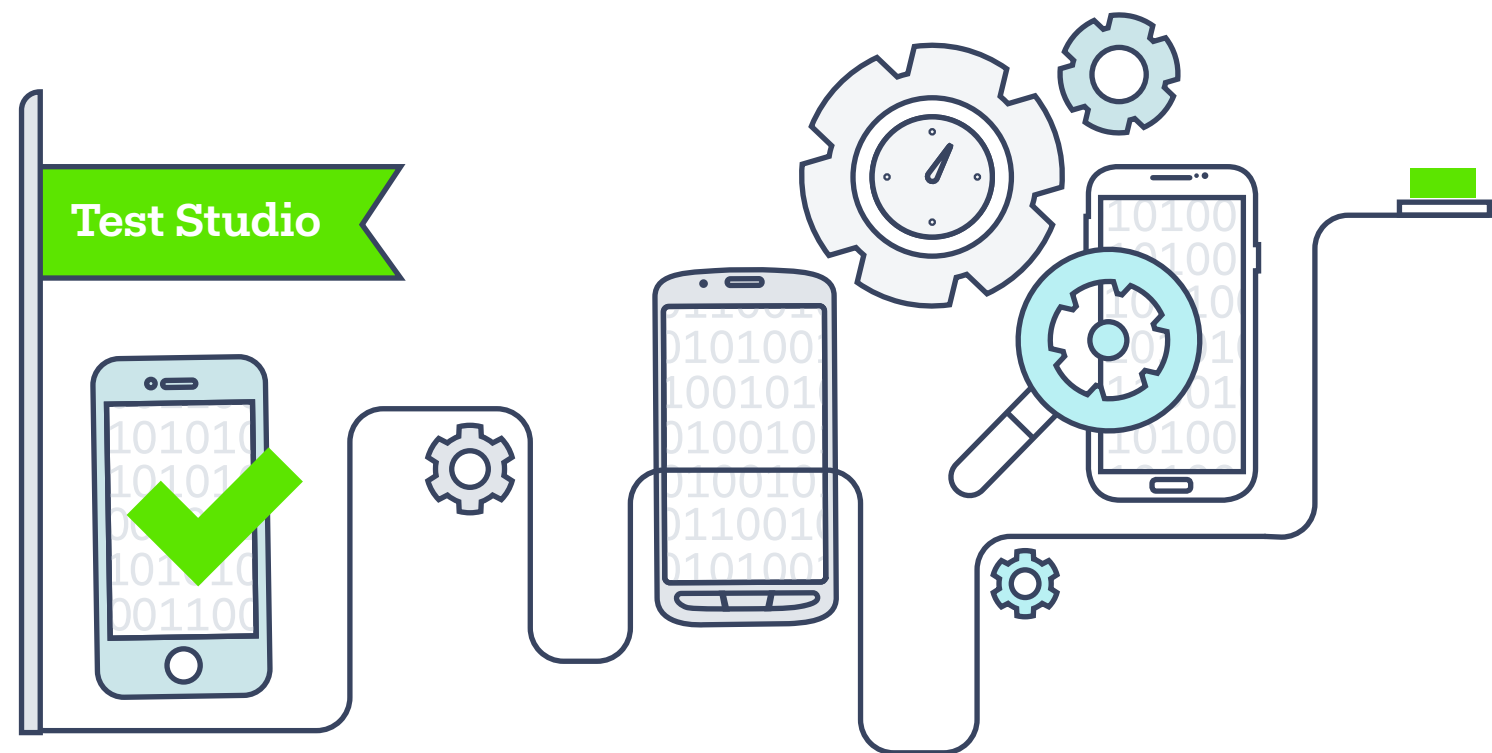
The capabilities in Test Studio Mobile enable development organizations to try new ways of integrating test into the agile scheme. And the tool is built for collaboration; Test Studio Mobile solution's intuitive UI, with built-in IDE, enables testers to craft automation and easily collaborate with SDETs and developers for long-term maintainability for mobile application testing of the app.

Test Studio Mobile will enable developers and testers to pass tests back and forth through source control, and allow developers to code out test steps, but keep the rest of the test in a maintainable format. Conventionally, when testers convert steps in the test case to code, the testing solution will convert the entire test case at once, in a one-way conversion—the user cannot convert a line of code and then convert back into a readable and maintainable format of metadata, and properties that can be updated with points and clicks. It stays in code.

As a result, ownership of that code remains with developers. Test Studio Mobile enables the team to convert a single test step to cover some edge case, but all the other steps in the test case are kept in a form maintainable through metadata or properties—for example, points and clicks.

**Test Studio Mobile is engineered to handle a wide variety of unconventional test scenarios. For example, the tester can take the device off Wi-Fi and VPN into the network, so that Test Studio Mobile can “see” it and connect it.**

This enables testing of the LTE or 4G connection. Because the device is not plugged into a USB port, the user can test what happens when the battery depletes. The tester can perform the so-called “elevator test,” in which the wireless signal goes from strong to nothing. Having the ability to simulate a Wi-Fi connection when the device is not actually tethered to a computer enables the user to test how the application responds under those conditions.

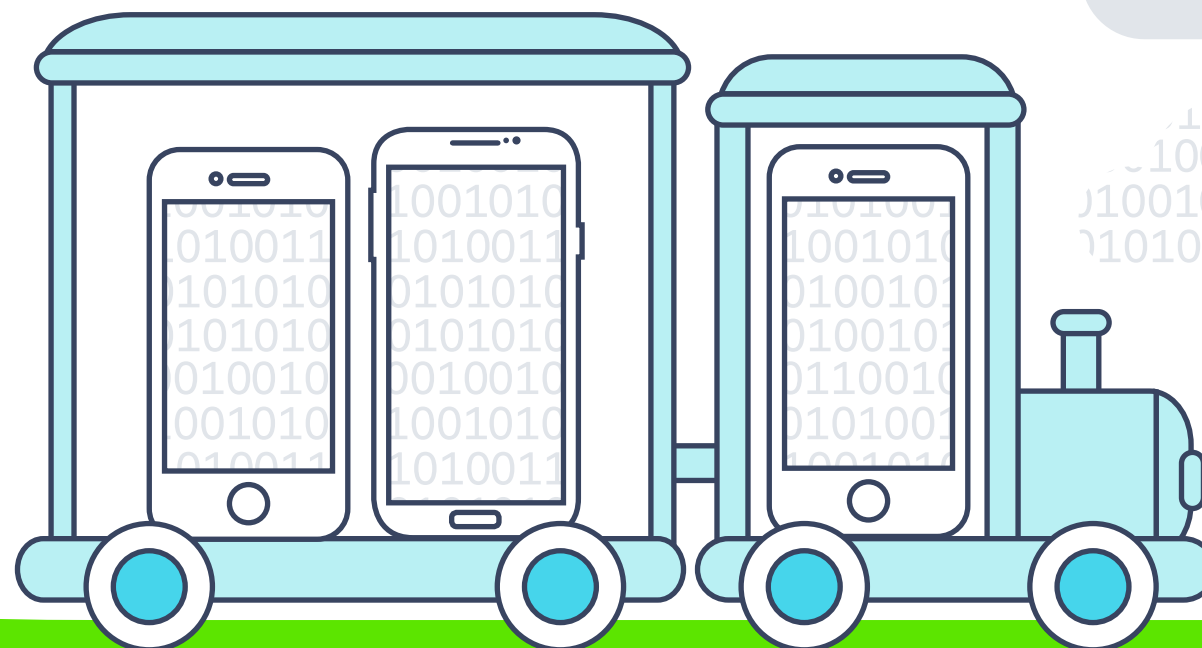


## On the Roadmap

The upcoming October 2015 release will add:

- Automated testing for native Android applications.
- Test lists: For mobile testing, Telerik will add the ability to create and execute static test lists. Testers will be able to execute one or several tests through a test list.
- Test using the device cloud: Testers will be able to send their Test Studio Mobile test cases, along with the instrumented app, to the device cloud. The team will be able to create custom device lists leveraging more than 350 iOS and Android devices in the cloud, and view detailed results from the test runs through a cloud portal interface.

Regular releases will flesh out not only the product offering, but our commitment to changing the role of the test team in the agile development process. The ability of Test Studio Mobile users to create test automation without coding can not only bring the test team more deeply into the management of each sprint, but may give testers more of a voice in SCRUM. For a given two-week sprint, the testers need to be able to say, “These are the test cases we need to complete during this sprint. So, don’t forget, during sprint planning, to incorporate the five days we need to develop and automate those test cases.”



# LET TELERIK BY PROGRESS GUIDE YOU TO SUCCEED IN MOBILE TESTING

Test automation is becoming increasingly popular, but in mobile development, it is still significantly earlier in its adoption pattern than is web application testing.

Collaboration is essential; once the automated test is created, it is important the nontechnical tester be able to take that test and run with it, without continually burdening the developers to build new test scripts. But products such as Telerik® Test Studio™ Mobile have the potential to broaden the job description of a QA engineer, to include much more direct, hands-on involvement in test automation.

The additional flexibility afforded to development managers in deploying resources to mobile projects, along with the increasing sophistication of tools such as Test Studio Mobile, will help enterprise development and deployment teams ride out the rapid, disruptive changes in the testing landscape.

Try now

**Request a demo** to learn how Telerik can help with your mobile testing strategy. Learn more about Telerik testing solutions and our suite of offerings. Visit us on:



## About the author:

Shраван्थि Alimilli is a Product Marketing Manager for Telerik Testing Solutions & ALM division. Her responsibilities include positioning and messaging of products for the division. She also serves as an evangelist for testing solutions and has more than a decade of experience in various marketing and program management positions in the high-tech industry. Find her as [@shravsboston](#) on Twitter.