Xamarin

Novarum DX transforms global health initiatives using native Xamarin apps

HIGHLIGHTS

Native performance and camera access for high-performance imaging.

Approximately 80% code reuse across platforms.

Xamarin based approach enables new app delivery in 4-6 weeks.

About **Novarum DX**

Lateral flow tests indicate the presence of specific substances in a fluid by showing one or more lines on a testing substrate and are familiar to many people from their use in home pregnancy testing. However, as these tests become more sophisticated and complex, reading them accurately becomes more challenging and time-consuming.

Today, there are thousands of these tests on the market for a variety of applications. They enable physicians to monitor the health of HIV/AIDS patients, help detect harmful chemicals in water supplies, and provide near-instant tests for deadly diseases such as Ebola.

While these compact and relatively rugged tests provide a high degree of portability and rapid results for field and point-of-care use, interpreting them often requires laboratory expertise, especially where tests are intended to provide a quantitative result as opposed to a binary one. Novarum DX, based in Edinburgh, Scotland, aims to change that and unlock the full potential of lateral flow tests.

" *We started Novarum DX three years ago based on the idea that we could make the reading of lateral flow tests easy by using smartphones and their built-in cameras,*" says Neil Polwart, Managing Director, Novarum DX . "*There are other apps available that enable reading of diagnostic tests with a phone, but we do it without any added hardware. Instead, we use patented image processing techniques that detect the presence of a test and ensure the image is prime for accurate reading. This makes using the app very simple and accurate - all you need is a compatible smartphone with a camera.*" The Novarum Reader can provide pass/fail test results as well as quantitative outputs, providing foolproof performance for virtually any user with minimal training.
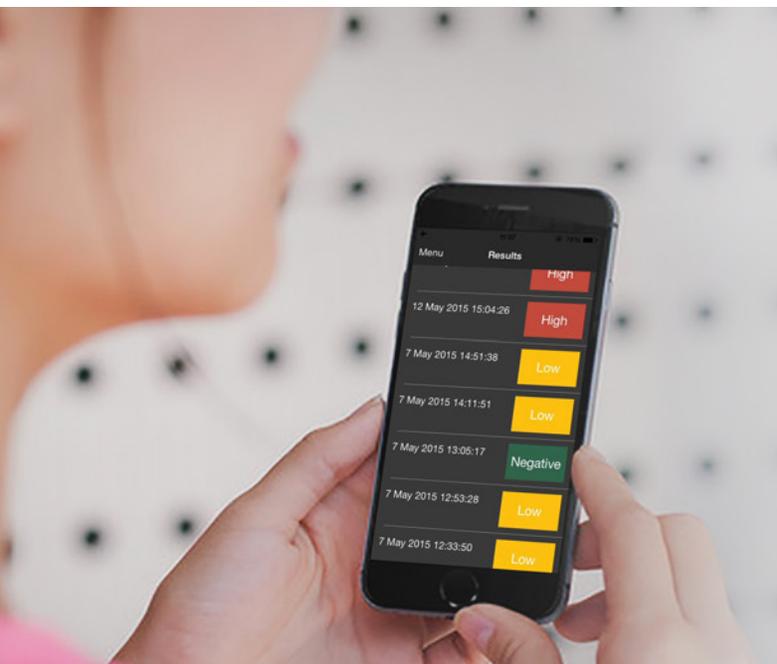
novarum™
mobile reader solutions

Native performance without native costs

When Novarum DX first started developing their technology, they looked at the full breadth of cross-platform development tools with a focus on minimizing user interface development time. However, they soon realized that the most important thing for the Novarum Reader was native access to the camera, native computational performance, and the ability to reuse business logic.

"In other write-once-run-anywhere solutions, you don't get powerful enough access to the device hardware, nor do you get native performance. We're doing computationally expensive image processing, so we need the native performance Xamarin provides,"* says Polwart. He explains, *"Alternative cross-platform tools all revert to the lowest common denominator. You can only use a feature that exists in every platform. So, the only way to achieve what we do with The Novarum Reader is to use native SDKs or Xamarin."*

Xamarin has greatly streamlined the development process for Novarum DX. *"We've used Xamarin from the beginning. Using native development, we'd have to have two separate teams, so essentially Xamarin enables us to use half the resources we would otherwise,"* says Polwart. *"We aim for 80% code reuse between platforms."*

> *"*We've developed a platform approach based on Xamarin that enables us to speed up development for our customers. For a basic app, we expect to be able to build something in four to six weeks."*
>
> **Neil Polwart, Managing Director, Novarum DX**

Revenue generating results with Xamarin

Since starting with just Polwart and one software developer three years ago, Novarum DX has grown to eleven team members, including five mobile developers who work across Android, iOS, and Windows Phone. *"Most of our customers want their apps to run on Android and iOS, and we are increasingly asked to work on Windows Phone, as well."*

Depending on the use case, Novarum Reader apps are often considered medical devices. *"Medical device development is not fast. Our first CE-marked device took two years from the time we started, to receiving market clearance in Europe, and our first FDA approved-device* *will probably follow a similar timeline."*
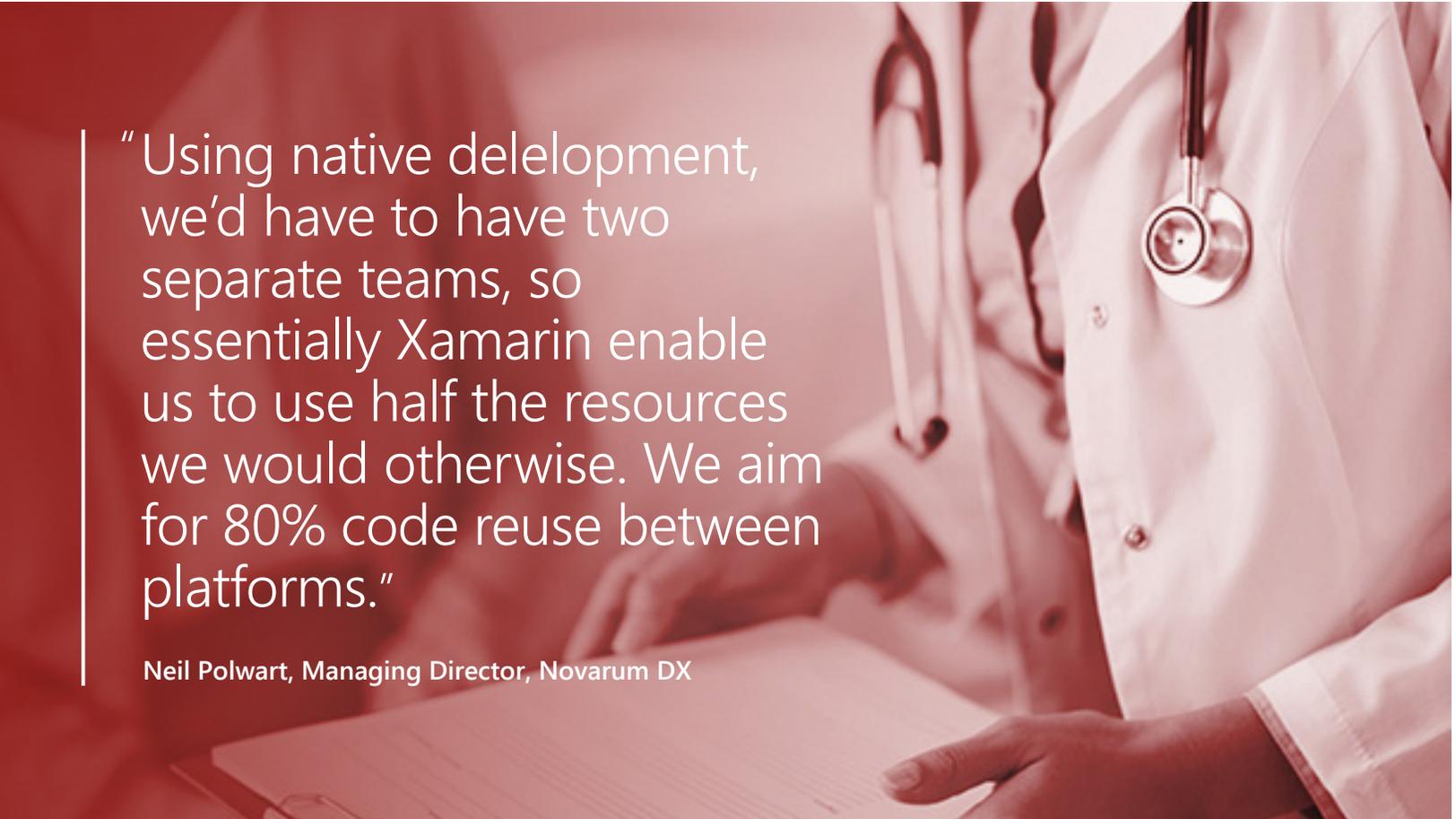
However, much of that time is spent navigating regulatory requirements as opposed to actually building the app. *"Since that first app, we've undertaken about 20 different projects for a variety of customers, including for medical device companies who have very strict quality and regulatory requirements. We've developed a platform approach based on Xamarin that enables us to speed up development for our customers. For a basic app, we expect to be able to build something in four to six weeks,"* says Polwart. *"We've generated about US$1.5 million in revenue with Xamarin as our platform."*

Small team, global impact

"We are across various projects, but the Ebola app is probably the one with the potential to make the biggest impact," says Polwart. *"With a test like that, people need to make a judgement call when reading the result. If you make the wrong one, you could potentially send a non-infected person into an Ebola ward, or release someone with the disease into the general population. Diagnostic test manufacturers have responded quickly,* but the doctors and nurses in the field need to make the right call every time and have confidence in what they are doing. We're giving them that confidence and providing a way to rapidly get geo-tagged data back to people who are trying to work out where to deploy resources."* With Xamarin, Novarum DX is enabling people to use the devices they already know to improve global response to disease and benefit human health.

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About Xamarin

Xamarin is the new standard for enterprise mobile development and quality. Over one million developers use Xamarin to accelerate the creation and testing of mission-critical consumer and enterprise apps. Xamarin powers mobile development for more than 100 of the Fortune 500 companies with a global customer base spanning 150 countries. Xamarin is a Visionary in Gartner's 2014 Magic Quadrant report for Mobile Application Development Platforms.

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