

***D. Makovskiy***

*Research supervisor: S. Gorobets,*

*Candidate of Pedagogical Sciences,*

*Associate professor*

*Zhytomyr Ivan Franco State University*

*Language tutor: O.E. Kravets,*

*Candidate of Pedagogical Sciences, senior lecturer*

## **DEVELOPMENT OF CROSSPLATFORM MOBILE APPLICATIONS**

**Formulation of the problem.** Today it is difficult to surprise the present day user by a smartphone, tablet, or computer. These devices have become the part of our lives. They continue to influence on popular culture. Moreover, their development has involved several leading competing companies.

From the developer's point of view such diversity is rather an obstacle, because almost each of all known platforms, has its own set of software (SDK), which is generally not compatible with other platforms. Thus, the developing of each platform separately is an expensive and difficult task.

Developers who accept to create applications for Android, IOS and Windows, must know such programming languages as Java, Objective-C (or Swift), and C#. In this case, the problem will involve other problems as much as 3 which require their development and support. The implementation of the web technologies usage is not the best choice at the moment. The application should run on different platforms, not only in experimental conditions, but also for the most common mobile devices [1].

**Analysis of current research.** The popularity of mobile devices is increasing every year. In 86% of smartphones that were sold in the second quarter of 2014 the operating system Android. Thus during 2014 has sold more than 1 billion Android-devices. On the other hand, about 40% of US corporate segment, use mobile devices running IOS. Meanwhile, Microsoft is actively engaged in the development and release of Windows 10 Mobile.

With such diversity and distribution of mobile cross-platform question is in itself. This spectrum is mostly notable for Xamarin, – Framework (comprehensive library) for cross-platform development for mobile applications using C# [2].

Xamarin team is primarily trying to satisfy all the needs and wishes of the developers (currently there are about 1.5 million), meaning that it depends on them, how many will develop applications using Xamarin. This we can judge based on an excellent document on the official site and on the number of amendments (most of them free) that you can download and install in your application. For beginners who use Xamarin, format search assistance formumah is quite unusual – a developer mainly will get answers to their questions on forums

dedicated to topics NET, C #, Objective-C (or Swift) for IOS, and Java with Android -SDK.

We tried to identify the main benefits of Xamarin, which are the frame of the problem:

- The development for IOS, Android and MAC using C # and .Net Framework.
- The features programming language C #, including LINQ, lambda expressions, Generic and async.
- The ability to develop in Visual Studio. Also present native development environment, – Xamarin Studio.
- The using Native UI (User Interface) in applications for each platform.
- The performance.
- The full access to the API chosen platform.
- The free version that contains sufficient functionality for full development.
- The support for Google Glass

We believe that Xamarin should be used when the application must be implemented for at least 2x major platforms, – Android and IOS. But devices which are under their control are different, ranging from hardware, ending the logic of the operating system and licensing in general. Therefore it is necessary to resort to some technical aspects which can be associated with the direct cross-platform implementation.

First of all, Xamarin framework consists of several parts:

- Xamarin.IOS – class library for C #, which gives developers access to the IOS SDK
- Xamarin.Android – class library for C #, which similarly provides developer access to the Android SDK
- Compilers for iOS and Android
- Xamarin Studio – Development environment;
- Plug-in for Visual Studio (working for the release of free Community Edition) [3].

Also, in addition to features of development, it should be indicated that difficulties and key issues that may arise in the cross-platform development:

- Emulators typically have limited functionality, in the case of Android rather slow. Therefore it is necessary to have devices that work on IOS and Android.
- With Android running a number of different devices, which do not resemble each other.
- We can not say that the project, which was built for Android and possibly save compiled binary file for IOS, – will have to rewrite the UI, and use xCode. But this is not a big problem, because the logic and structure of the code is not affected.
- On average, could use all about 60% of the codes for different platforms are common.

Thus, the theme cross-platform, especially in mobile applications relevant. We highlight the possibility of implementing using Xamarin enables speedy solution of the problem with the least expenditure of resources without reducing performance.

### **LITERATURE**

1. Xamarin. За и против [Electronic resource] – Access: <https://habrahabr.ru/post/227863/>
2. Подробно о Xamarin [Electronic resource] – Access: <https://habrahabr.ru/post/188130/>
3. The Xamarin story [Electronic resource] – Access: <https://www.xamarin.com/about>