



Technology of projecting mobile application for vizualization the process in sociological problems

Saida Safibullayevna Beknazarova¹
Nodira Gayratovna Kamilova²
Ozoda Safibullaevna Abdullayeva²
Mexriban Jaumitbayeva⁴

¹ professor, Dsc. of Tashkent University of Information Technologies named after Muhammad Khwarizmi
saida.beknazarova@gmail.com

² doctor of psychological sciences Professor of Tashkent State Pedagogical University named after Nizami,
Tashkent, Uzbekistan, Nodira.kamilova@gmail.com

³ Doctor of philosophy degree (PhD) in pedagogical sciences, associate professor of dept. Information
Technology in Technical Systems of Namangan Engineering Construction Institute, Namangan, Uzbekistan,
aspirantka.030@gmail.com

⁴ Dept. Audiovisual technologies of Tashkent University of Information Technologies named by
Muhammad Al- Khwarizmi, Tashkent, Uzbekistan, mekhribanzhaumitbaeva@gmail.com

Abstract— This article describes the principles, design tools, and mobile application development, which determines the accuracy of the information found on the Internet. Every app starts with an idea. The team should have an accurate idea of what MP should be developed, what tasks it should solve, and start collecting analytics. In-depth analysis of existing mobile applications (of a similar or similar nature), models of behavior of MP users. At each stage of the analysis, we must focus on the end user and think through the customer's life cycle. This helps us to understand together how people will use the new app — and make it as convenient, clear and useful as possible. Such a service will benefit society and the end user. The team develops a detailed description of the functionality and design of the future application. Defines users, describes user stories, and forms the technical requirements for the mobile application (MP), i.e. it is necessary to note whether the MP will have online or offline versions, which modules (items) it will contain what services (services) it will represent, what data it will include, standard situational cases, etc. That is, we fix what the application should be, what it should be able to do, and how it will work. User Stories describe step-by-step how the user behaves in the application: passes authorization, views modules, leaves requests, and asks for help. Such a story describes the user's task, which he solves with the help of both the application and its ultimate benefit in the use of MP. As a result, the MP developer gets a list of requirements that allows you to determine the functionality of the future application and make it as user-friendly as possible.

[Saida Safibullayevna Beknazarova, Nodira Gayratovna Kamilova, Ozoda Safibullaevna Abdullayeva, Mexriban Jaumitbayeva. **Technology of projecting mobile application for vizualization the process in sociological problems**. Rep Opinion 2021;13(10):45-51]. ISSN 1553-9873 (print); ISSN 2375-7205 (online). <http://www.sciencepub.net/report>. 8. doi:[10.7537/marsroj131021.08](https://doi.org/10.7537/marsroj131021.08).

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1. Introduction

Training in media specialists in different fields as an effective means of developing creative, independently and critically thinking individual in the intensive increase in the flow of information is an important task.

For effective learning media courses trained first step is to determine the level of knowledge in the chosen specialty through tests.

In a comparative analysis of the most important aspect of the discussion is a system of criteria

on the basis of which is carried out such an analysis. Criteria analysis should reflect on the one hand the inherent nature of the investigated phenomenon or object, and on the other - the vector of its desired development. Since we are studying the subject is media education system, in particular the effective application media courses.

Today it is difficult to imagine a person without a cell phone, tablet computer, smart phone or any other portable media device. We are accustomed to the fact that is always at hand is not only a means of

communication, but also a variety of useful functions such as a calculator, organizer, converter, calendar, clock. Smartphones are becoming the new mobile gaming platform, competing with the classic handheld game systems like the Nintendo DS or Playstation Portable.

In the smartphone device is pretty simple. Mostly it consists of several separate units - memory, processor, which is engaged in computing, data storage, radio module, which in turn consists of a transmitter and a receiver and is responsible for communication. The most interesting thing here - the operating system installed on the internal memory. The operating system and version depend all the main features of the device. Smartphones, as well as personal computers, there is a different trim levels and different operating systems, varieties of which we consider below.

With the growth in sales of mobile devices worldwide, and growing demand for a variety of applications for them. Every self-respecting company aims to have at least one mobile app to be in his client "always at hand". And the existence of some companies and all difficult to imagine without mobile devices and specialized software, with which you can, for example, manage databases, or to monitor the status of their product on the market at any given time.

2. Methodology

Android - an operating system with open source for compact devices, based on the kernel Linux. Android is a popular platform for smartphones, as well as a variety of tablet PCs, personal media players and other portable electronic devices. Currently the Android OS running on a variety of platforms, including habitual for handheld devices and ARM processor family, common to classical computers, processors x86. Besides them, Android also supports families MIPS processors and POWER, Figure 1.

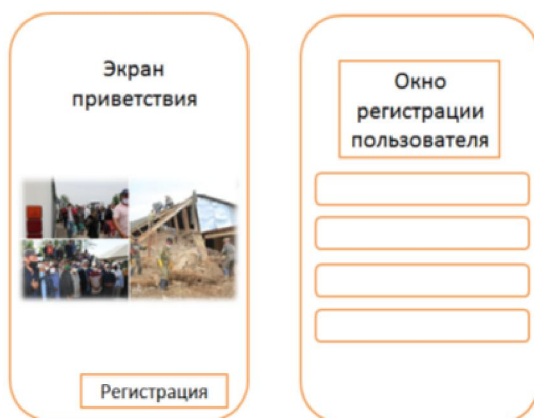


Fig. 1. - Application screen Android 2.0

Thanks to the special library developed by Google, the Android operating system allows third-party developers to create applications for it in Java. Besides programmers also have the opportunity to develop software for Android in the language C, and some other programming languages, with a special set of Android Native Development Kit.

Among other features, the Android operating system is largely integrated with the company's service by Google.

Android Market - an online shop storage (other words - the online service) from Google, which allows owners of mobile phones with the Android operating system to download and buy a variety of applications. Developer account, which allows you to publish applications, worth \$ 25. Paid App developers can publish not from all countries.

Currently Android OS develops more and more, and its market development Android Market is becoming more and more promising.

As the first mobile application development, which determines the accuracy of the information found on the Internet, uses an object-oriented programming language Java.

Java - an object-oriented programming language developed by Sun Microsystems. Java applications are normally compiled into a special byte code, so they can run on any Java-virtual machine (JVM) regardless of computer architecture. The official release date - May 23, 1995.

The virtue of this method to make programs - full independence bytecode from operating system and hardware that allows Java-based applications on any device for which there is a corresponding virtual machine. Another important feature of Java technology is a flexible security system due to the fact that the execution of the program is completely controlled by the virtual machine. Any transactions that exceed the established authority of the program (for example, an unauthorized attempt to access data or connect to another computer) cause an immediate interrupt.

Often to the disadvantage of the concept of virtual machine include the fact that the execution of bytecode virtual machine can reduce the performance of programs and algorithms implemented in Java. Recently introduced a number of improvements that have increased the speed of the few programs in Java:

- Use technology broadcast bytecode into machine code at run-time program (JIT- technology) with the ability to save versions of a class in native code
- extensive use of platform-oriented code (native-code) in standard libraries

- hardware, providing faster processing bytecode (eg technology Jazelle, supported by some processors firm ARM).

The ideas embodied in the concept and the various implementations of the virtual machine, Java, inspired many enthusiasts to widen the range of languages that could be used to create programs that are executed on the virtual machine. These ideas have also found expression in the specification Language Infrastructure CLI, which provides the foundation platform. NET by Microsoft.

Latest release is version 1.6 , which was produced improved security, improved support for XML, as well as added support for JavaScript scripting language based on the mechanism of Mozilla Rhino, improved integration with the desktop, added some new opportunities for creating graphical user interfaces .

As a development environment was selected product free Eclipse IDE.

Eclipse - a free integrated development environment modular cross-platform applications. Developed and maintained by Eclipse Foundation, Figure 2.

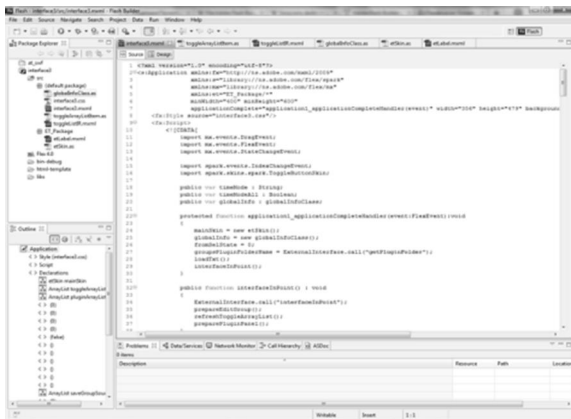


Fig. 2 - Interface Eclipse IDE.

It looks like "Project Explorer", allowing you to view projects and packages contained therein, as well as directly edit the source code.

This screen though used as the menu, but may include any element completely. It can be activated any animation, including using objects interacting according to the laws of physics.

The user must enter a fragment of scanned data, the application accesses the search engines to determine the sources of information by keywords , and then displays a list of the proposed results .

How is the process of finding reliable sources of information? This process can be divided into three key process lets you develop applications to issue the most relevant keywords or phrases requests results are as follows: scanning , indexing, processing.

Scanning - a process during which the application detects new and updated pages to be added to its database, based on the size of the database to which it appeals. Application will use an algorithmic process: computer programs determine which sites to scan according to keywords and how often, how many pages are indexed from each site.

The scan begins with a list of URL- addresses of web pages, obtained from the previous scan and complemented by data from the site map provided by webmasters. When an application is visiting each of these sites, he discovers links to other pages and adds them to the list of pages to crawl.

New sites eventually pass in the status of existing, "dead" (i.e. not leading anywhere) links are identified and data is used to update the index (database) applications.

Indexing - processing the application of each of the pages to which it comes, in order to build databases of all the words that he recognizes and location of these words on each page.

Processing occurs when a user enters a search query, then the application comes into its database (index) for the selection of the most appropriate keyword pages and returns results that are most relevant to users.

Above have been disclosed stages of designing and developing applications for Android, ways of teaching and possibilities of the promising market of Android Market, as well as the principle of operation is considered a mobile application that determines the accuracy of the information found on the Internet. Development of applications for mobile devices using the operating system Android, with the development of information technology, this sphere gets more and more interest and prospects for development. Credit for this belongs to Google, so it should be noted that Android developers have gone by very competent, giving anyone wishing to develop applications for the platform. This is facilitated by:

Open source code that plays into the hands of developers because they can use the work of other programmers from around the world . Ease of development, qualitative feedback, a huge number of developers around the world, open source, accessibility to market - this is the way success in the modern world of computer mobile technology.

The stages of creating a mobile application (mp)

In the studio, we usually build the work like this:

- analytics;
- terms of reference;
- engineering and design;
- development;
- testing and stabilization;

- publication in the stores.;
- support and development.

3. Realization of the concept

STAGE 1. Analytics

Every app starts with an idea. The team should have an accurate idea of what MP should be developed, what tasks it should solve, and start collecting analytics. In-depth analysis of existing mobile applications (of a similar or similar nature), models of behavior of MP users...

At each stage of the analysis, we must focus on the end user and think through the customer's life cycle. This helps us to understand together how people will use the new app — and make it as convenient, clear and useful as possible. Such a service will benefit society and the end user.

STAGE 2. Technical specification

The team develops a detailed description of the functionality and design of the future application.

Defines users, describes user stories, and forms the technical requirements for the mobile application (MP), i.e. it is necessary to note whether the MP will have online or offline versions, which modules (items) it will contain what services (services) it will represent, what data it will include, standard situational cases, etc. That is, we fix what the application should be, what it should be able to do, and how it will work.

What is the result:

1. list of features that should be included in the app;
2. interface requirements, user roles, security, performance, and other non-functional requirements;
3. the description of how all these requirements will be implemented;
4. project implementation stages.

What are user stories?

User Stories describe step-by-step how the user behaves in the application: passes authorization, views modules, leaves requests, and asks for help. Such a story describes the user's task, which he solves with the help of both the application and its ultimate benefit in the use of MP. As a result, the MP developer gets a list of requirements that allows you to determine the functionality of the future application and make it as user-friendly as possible [5,6].

(P. S. Due to this technical specification (TS) developed by MP clearly understands what the service wants to get the Team, and gradually implements the original idea).

STAGE 3. Technical specification

The terms of reference should reflect the following.

1. General information:

- the purpose of creating an MP;

- compatible with platforms: this will be an app for Android or other platforms;
- scalability: can the application quickly adapt to sudden changes and peak loads, such as an increase in the number of users or the volume of data transfer;
- fault tolerance: whether the application should continue running if one or more of its components fail.

2. Functional requirements for the application •

- user roles: what levels of access should different users have, for example, a guest (MP users) and an authorized user (staff providing services);
- data formats: how data exchange will be implemented in the application;
- integration: should the application support collaboration with other services, such as payment systems and mail servers;
- access interfaces: how the application will exchange data with external services;
- additional features: should the application be able to do something else, such as work with files or encryption libraries;
- configuration and administration: which elements the administrator will use to manage the application;
- system composition: what the mobile app consists of, i.e. screens, push notifications, authentication system, etc.

3. Non-functional requirements for the application this item is prepared by the developer of the MP:

- security: security requirements of the application;
- logging: does the system need to generate and save reports on errors that occurred during the operation of the application, and for what types of events it should be done;
- performance: requirements for the operation of the application, such as the speed of the database;
- server hardware requirements: a list of technical specifications.

4. Implementation of the application functionality (i.e. accurately describe each MP module,

visually draw each MP screen, link between MP modules) •

- loading screen;
- registration and authorization;
- main screen;
- menu;
- search; ...
- notifications.

The architecture of the developed application will be based on the concept of layers and will include working with Google maps and social network elements [3,4].

The criteria for the description of the application architecture:

- System components and their interaction;
- The most important classes and functions;
- Data organization (what exactly will the data be and where to store it);
- The structure of the user interface (an approximate description of what components it contains);
- Handling exceptions and failures;
- Security;
- Use of technologies and third-party software;
- Resource usage (how many people will be involved in the development and what machine resources will be required);
- Ways to develop the system.

Architecture

As the basis of the application architecture, it was decided to use a three-layer template, from the concept of layers, which includes:

- View (How the user sees the app);
- Domain (Business Logic);
- Data source (Working with data).

Representation of a user is completely contained in the mobile application.

Business logic—partly located in the application (on the client), partly on the server.

The user's data is stored on the server, Figure 4.

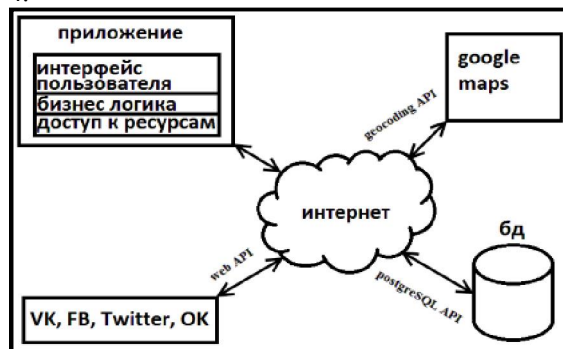


Fig 4. Application Components

The operation of these layers is mainly provided by software tools, which can be represented as interconnected components (Figure 1), where:

- The view component is responsible for the user interface;
- The application component implements an algorithm for solving a specific problem;
- The resource management component provides access to the necessary resources.

The view component(gui) contains:

- Registration form;
 - Tabed activity with three tabs: profile, map, news;
 - Button with settings.
- The business logic will include classes:
- Working with Google maps;
 - Working with meetings;
 - Working with your friends list;
 - Working with a local database;
 - Working with news;
 - Classes of all activity;
 - Working with the chat;
 - Work with user accounts.

To access the resources, you will use:

- Standard DBHelper class, for sqlite;
- JDBC driver, for PostgreSQL.

Data access will work over the Internet with:

- API google maps;
- Database API;
- Social media API.

The application will send all the user data to the remote server, and save it in the database.

All exceptions and failures will be recorded in the application logs, which will be scanned for errors.

For the user's security, an HTTPS connection is used, and passwords are stored in cached form.

The development of the application and the web server is handled by two people, one responsible for the interface and the application, the second for communication with the server and database design.

In Android studio, interface files are described in XML. The XML file contains information about the location of the elements and their identifiers. This information is needed to call the elements from the application code [1,2]. It is very important to mark up the interface correctly, since all android devices have different screen resolutions. If you mark the interface is bad, then the interface will not be displayed correctly. During development, the interface was designed (In the drawings, the interface background is white, so that there are no difficulties when printing). The list of developed markup files includes:

- Eight screen markup files;
- One list item markup file.

The list of interface files is shown in Figure 3.

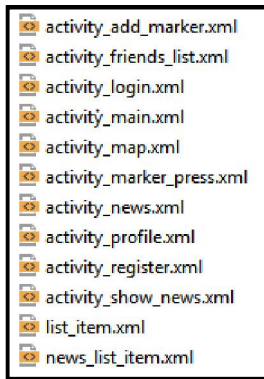


Fig. 3. List of interface files

The last of the main tabs is the events tab, which contains a list of the nearest events that are taken from the Vologda Open data portal. If you click on an item in this list, you will see information about this event.

The list item contains information:

- The name of the event;
- Date of the event;
- Age category of the event.

Discussion of results

The construction of training systems is traditionally based on a linear model of dialogue [1]. The linearity of training consists in the fact that the trainee is presented with a chain of question-and-answer frames, each step of the dialogue is determined by a pre-formed or system-generated scenario. In this model, the initiative is left to the developer, to the concept that will be created as a result, and the user is assigned a passive role. In order to simplify knowledge control, the answer most often consists in selecting the correct value or correct answers from a list. The main disadvantage of such a testing model (namely, in most tests, this form is used) is the possibility of randomly guessing the correct answers by the test taker. Another, less common way to build a dialog is a context-free response that is analyzed using keywords that are expected in the test subject's response. This method is free from the disadvantage inherent in the first method, but allows for incorrect interpretation of phrases due to the simplified procedure of lexical analysis.

Linear models — test tasks-have another drawback. During training and certification, the user operates only with ideas and concepts, without analyzing related issues. However, for the best training and assessment of knowledge, it is necessary to make a heuristic understanding of the training information, an abstract or figurative analysis of the presented and related training information. In this case, there is a need to move from heuristic methods of representation in natural language

to model methods of representation based on artificial language.

In nonlinear models, the role of the learner changes. Now the user asks questions and builds a working hypothesis based on the answers of the system. The ultimate goal of such a dialogue is to find an initial hypothesis based on the information received and the logical connection of the questions themselves. In such models, the structure of maintaining a dialogue with the user, analyzing the response, and developing the system's response to the student's responses becomes more complicated.

In the media education system, it is proposed to use the synthesis of expert and simulation systems. Expert systems allow you to create a system that operates with the professional knowledge of an expert (teacher), but do not allow you to recreate a full-fledged dialogue between a person and the system. And for training, it is important to have a dialogue between the system, which has a certain knowledge base, and the trainee, whose depth of knowledge and skills needs to be evaluated. This dialog is created by the simulation system. A feedback system has been developed to simulate the dialogue.

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