THE STATE COMMITTEE OF COMMUNICATION, INFORMATION AND TELECOMMUNICATION TECHNOLOGIES OF THE REPUBLIC OF UZBEKISTAN
TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES

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Head of the department
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FINAL QUALIFYING WORK

Theme: Development of reporting subsystem for software.uz

Graduate _____ Kamalova A.N.
signature Full name

Scientific adviser _____ Pak V.S.
signature Full name

Consultant of Life Safety _____ Abdullaeva S.M.
signature Full name

Reviewer _____ Gulyamov Sh.M.
signature Full name

Tashkent – 2014

THE STATE COMMITTEE OF COMMUNICATION, INFORMATION AND TELECOMMUNICATION TECHNOLOGIES OF THE REPUBLIC OF UZBEKISTAN
TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES

Faculty: Computer engineering subdepartment Information Technology

Direction (specialty): 5521900 – «Computers and Information Technology»

A p p r o v e d

Head of the department _____

« ___ »_____ 2014

ASSIGNMENT

of Kamalova Albina Nailevna final qualifying work

1. Theme: Development of reporting subsystem for software.uz.

2. Subject approved by order of the University of «___» _____ 2014 г. № _____

3. Work completion date: 31.05.2014

4. Source data to work: Statement of the problem, technical data, training manuals, internet resources, guides

5. Contents settlement and explanatory notes (list subject to development issues): Analysis of the subject area, requirements analysis for the subsystem development, design database structure, design subsystem architecture, subsystem realization in a programming language.

6. List of graphic material: Tables, diagrams, user interfaces, presentation.

7. Date of issue assignment: _____

Scientific adviser _____
signature

Assignment received
_____
signature

8. Consultants for the individual sections of the graduation work

Section	Full name of scientific adviser	Signature, date	
		Task issued	Task took
Main part	Pak V.S.		
Life safety	Abdullaeva S.M.		

9. Progress chart

№	Name of the section of work	Deadline	Completion mark
1	Analysis of the subject area	30.01.2014 – 14.02.2014	
2	Determination of the functional structure of software.uz	15.02.2014 – 22.02.2014	
3	Analyzing of the database of software.uz subsystems	24.02.2014 – 15.03.2014	
4	Designing of the web portal	17.03.2014 – 14.04.2014	
5	Displaying the results in form of diagrams	15.04.2014 – 03.05.2014	
6	Life safety	05.05.2014 – 13.05.2014	
7	Preparation of presentations	14.05.2014 – 22.05.2014	
8	The writing of the report	23.05.2014 – 31.05.2014	

Graduate _____ «_____» _____ 2014y.

(signature)

Scientific adviser _____ «_____» _____ 2014y.

(signature)

In the final qualifying work solved the problem of providing feedback as one of the main functions of the professional social network by gathering , collating and reporting quantitative data, forming rating developers and software products. The analysis results are displayed in a variety of graphic forms. Development is implemented on the platform ASP.NET, C # programming language and database Microsoft SQL Server 2008 R2 and implemented in the web portal "National directory of developers and software software.uz» subsystem "Analytics".

В выпускной квалифицированной работе была решена задача обеспечения обратной связи путем организации сбора, систематизации и представления (reporting) количественных данных, формирующих рейтинг разработчиков и программных продуктов. Результаты анализа отображаются в разнообразных графических формах. Разработка реализована на платформе ASP.NET, языке программирования C# и СУБД Microsoft SQL Server 2008 R2 и внедрена в веб-портале «Национальный каталог разработчиков и программных продуктов software.uz» в подсистеме «Аналитика».

Битирув малакавий ишида ижтимоий тармокнинг асосий функцияси булган тескари алока дастурчилар ва дастурий таъминотлар рейтингини шакллантирадиган микдорий маълумотларни йигиш, систематизациялаш ва курсатиш йули билан амалга оширилган. Анализ натижалари хар хил график шаклларда курсатилади. Тизимни яратишда ASP.NET технологияси, C# дастурлаш тили ва Microsoft SQL Server 2008 R2 МОБТ лардан фойдаланилди ва тизим «Software.uz миллий дастурчилар ва дастурий таъминотлар каталоги»нинг «Аналитика» булимига жорий килинган.

CONTENT

Introduction

In the XXI century mastery of information technologies and the introduction of global information systems is crucial for the country's progress and national development. Information technology forms the cutting edge of scientific and technological progress, creates a foundation for the development of information science and all the other technologies. The main determinants of information technology development incentives are socio- economic needs of society.

Development of information and communication technology (ICT) is an important factor in raising the prosperity and economic growth, becoming one of the main priorities of the state policy in Uzbekistan.

Principled position of the President of Uzbekistan on key issues computerization of society gave special importance to this problem, will fundamentally change approaches to information, go to the complex introduction of computer and information technologies.

Resolutions of the President been adopted recently and the Cabinet of Ministers, stimulating the development of software market of domestic production. These include the following documents:

1. Decree of the President of the Republic of Uzbekistan dated 21.03.2012. № PP-1730 "On measures for further implementation and development of information and communication technologies".

2. Decree of the President of the Republic of Uzbekistan № PP-2042 from 20.09.13 «O measures to further strengthen the incentives of domestic software developers".

As a result, according to the State Statistics Committee of Uzbekistan, in 2013 the market for computer programming services in Uzbekistan has more than doubled, almost 230% compared to last year.

In the rapid development of ICT in Uzbekistan emerged urgent need to establish a social network of professional web software developers, the core of which must be a national web portal directory of developers and software products.

In accordance with the decisions of the State Committee on Communications and Information Technologies of the Republic of Uzbekistan in 2013 by a group of professionals and students of the Tashkent University of Information Technologies has developed and implemented the «National directory of developers and software Software.uz» (hereinafter catalog) .

As part of the above group author of this final qualifying work was carried out work to create a subsystem for collecting, analyzing and reporting estimates of developers (freelancers and software companies), and assessments of the quality of software products (reporting subsystem) Catalog. As part of this work was to solve the problem of the organization of feedback portal "National directory of developers and software software.uz» by collecting and reporting quantitative data forming rating developers and software products.

Final work consists of the following parts.

The introduction describes in general terms the relevance and importance of the work. Also generally shown maintenance work.

In the first chapter the analysis of solutions for the development of portals. Also presents the results of the functional structure of the Catalog and automation solution.

The second chapter presents the results of design and development subsystem analysis and evaluation of companies, freelancers and software products.

The third chapter examines the issues of safety.

Analysis of the subject area

1.1 Analysis and structure of web-portals

The word "portal" has come to the World Network of architecture. Web-portals (the portals) are such a class of software systems for which the terminology and classification have not yet developed fully. You can find different definitions of "portal" and a variety of functional capabilities of its software implementation.

Within the framework of this thesis under the portal, we understand web-application that has, compared to web-site, enhanced functionality and implementing the idea of centralized user community access to relevant information and services.

If web-site - a set of logically interrelated pages accessible through a web-browser over HTTP, then the portal - a web-site that has a wide range of functions.

Portal - a personalized and integrated web interface for users to access information, applications and collaboration tools.

Portal - a tool for the management of intellectual property: it can be of various types of information and data. The portal collects a large amount of various disparate information and organize it, categorize and personalize to present it to us in the right form at the right time in the right place.

Functionality portals:

• store and classify the diverse information;

• collect information from various sources;

• support collaboration and interaction of people;

• produce relevant full-text search;

• provide personalized information delivery to end users.

Portals can be classified according to various criteria. The following criteria for classification as an advocate of the portal theme, target audience, and the problem solved by the portal technology used.

Different types of classifications portals.

1. Target audience may not be limited and then the portal is open, otherwise the portal is closed.

a. Open portals available to a wide community of users. Most of these portals are on the Internet.

b. Closed portals provide access to limited users. User registration in such portals usually goes step verification when recorded on the right access to the portal is supported by authorized persons. This type usually include portals placed in networks of organizations. They are intended for employees and known as B2E portals.

2. From the perspective of the target portal can be directed to perform one or more tasks. The most common are several classes of portals, each portal can be assigned to one or more classes.

a. Analytical portals allow decision-makers to receive and generate reports.

b. Portals support business processes implement specific functions and support specific processes and applications. Examples are B2B, B2C or B2E portals.

c. Portals provide users with a collaborative virtual space for coordination and implementation of the joint work.

d. Search portals solutions designed to attract experts to solve problems. To do this, the portal keeps track of users and their competence that allows you to select experts in specific areas of expertise , find them and use their experience in solving problems.

e. Portals, document management.

f. Portals manage structured information.

g. Knowledge management portals. Designed to help companies make better use of its existing explicit and implicit knowledge through knowledge management at every stage of its life cycle - on the stages of identification, creation, storage, distribution and use.

h. Portals directories. Systematize the available information resources and provide the opportunity to find the necessary resources.

i. Portals, e-marketplaces. They connect buyers and sellers together, providing specific information about markets, products and services.

j. ASP- portals (ASP, Application Service Provider). ASP- portals, as the property of a company, are intended to provide services to other companies, they are the type of B2B portals. They provide an opportunity for companies to get customers to rent, both goods and services.

3. From the standpoint of the subject portals can be divided into horizontal and vertical:

a. Vertical portals provide a full list of required information and functions for a specific and usually narrow circle of users. An example of industrial vertical portals can serve as portals for insurance, automotive, etc.

b. Information- themed content and functions of the horizontal portal aimed at a wide range of users. In Internet portals such called mega portals (Yahoo!, Yandex , etc.) , as they provide information (weather, news , etc.) and functions (search sites , sending e- mail, etc.) , useful to almost all Internet users.

4. Terms of portals used technologies can be divided into traditional and semantic.

a. In traditional portals information is processed without regard to its semantics.

b. Semantic portals are a new class of portals that contain model some domain knowledge and use it to process information based on semantics. To implement such portals in addition to traditional technologies used actively developing semantic technologies.

Approaches technologies and standards, as used within the infrastructure of the portal, and the implementation of its functional modules , are commonly used . This allows us to describe a generalized architecture portal covering a potential functionality (figure 1.1).

At the level of the user interface used thin client (Web- browser), the ability to visualize the presentation of information described in the language of HTML. To use some of the features of the portal user can use and some other client applications (such as e-mail client, RSS- client, etc.).

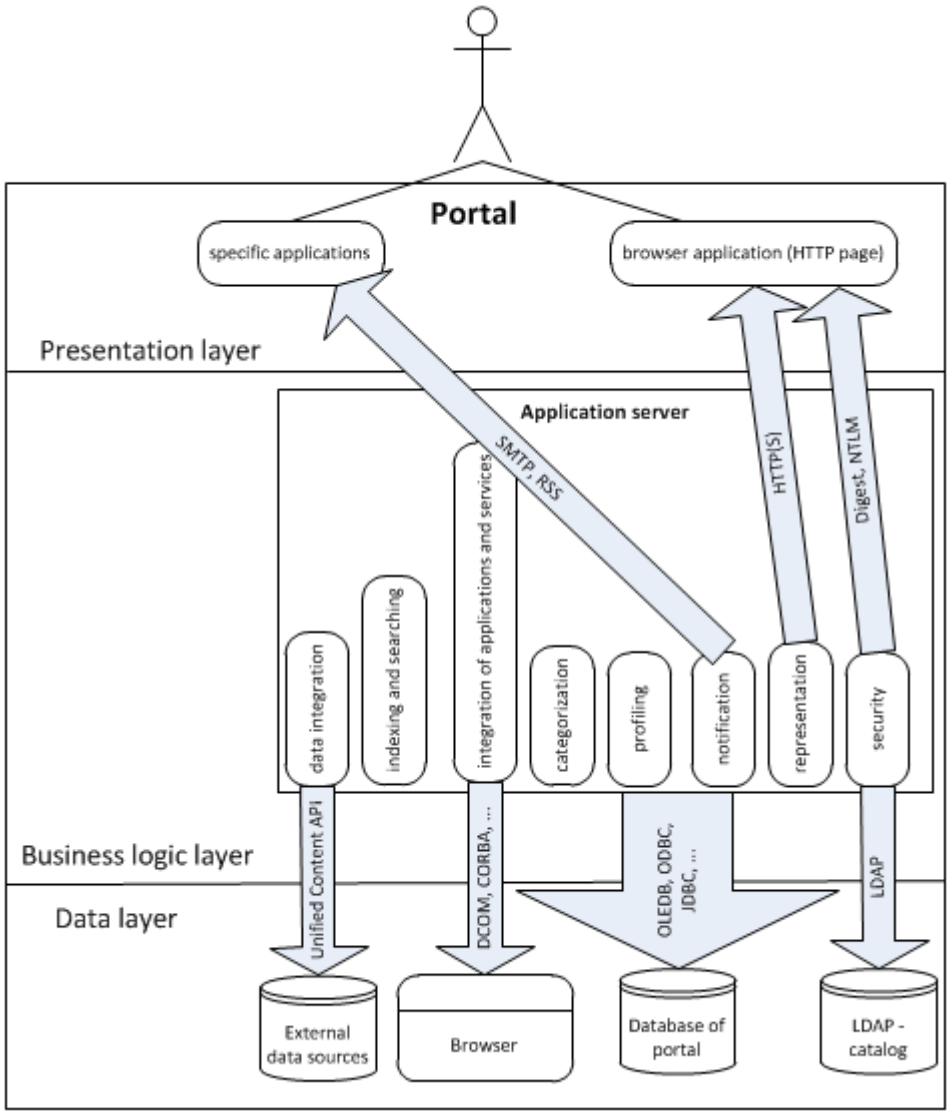

Figure 1.1. Architecture of portal

To implement the portal infrastructure there are a number of widely used technologies and application servers. The most common application servers include software products such as Microsoft IIS, Apache HTTP Server, Oracle Application Server.

As a data warehouse used relational databases, which are accessed using technology OLEDB, ODBC, JDBC, etc.

As software technologies used ASP, ASP.NET, PHP, JSP and others. Visual representation described in the language HTML, which is interpreted by Web-browser user.

When implementing the functional modules are often used following solutions:

• Data integration software based on the use of intermediaries (mediator). An example of this approach is the implementation of a software interface Unified Content API from the company IBM.

• Integration of applications and services based on component technologies such as CORBA, DCOM, Web- services,. NET remoting.

For indexing and retrieval in the case of full-text documents using the method of inverse indices and different statistical methods ranking results.

Tools categorization often based on cluster analysis, using vector space model (vector space model) or statistical methods.

In order to describe the profiling of users created with the required set of attributes to be able to interpret them.

Alert users performed on predefined events using technologies such as push-delivery e-mail, RSS- mailing, etc.

Formation HTML- presentation is performed based on combining multiple data sources through a number of similar software technologies, such as WebParts.

In the area of safety rules applicable distribution privilege separation of users into groups and data encryption. User authentication is performed by the protocols SSL, NTLM, Kerberos, etc. User accounts can be stored in the portal database, and specialized storage facilities to which access is performed via LDAP.

Although approaches to designing and implementing portals can be considered sufficiently mature in terms of methods and technologies used, there is an objective need for their development. This need is due to the development of telecommunication technologies that make information more accessible and objective information growth.

The portal is such an information system (IS), which provides unified access to the user community information space , and therefore the problem of improving the quality of information processes with a large volume of information in the portal is particularly relevant . One approach to solving this problem is to move to the semantic level of the collection, processing, collection, storage, retrieval and dissemination of information. This approach is developed in the frame work of "Semantic technologies".

1.2 Analysis of modern web technologies of server-side applications

At the moment there and successfully applied for constructing various types of technology Web server-side applications. All these applications have a common goal - the implementation of business - server-side logic and code generation for the client. Also in all these applications is the same architecture server and client interaction and overall interaction protocol - HTTP. The general logic of the application server side is shown in figure 1.2.

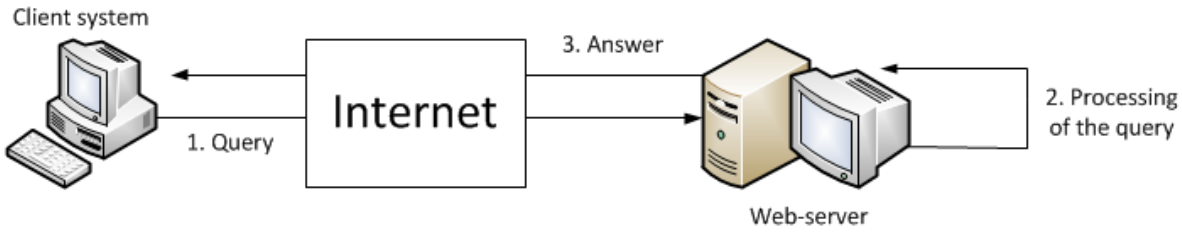

Figure 1.2. Architecture of server

As can be seen from the figure, the host application is done in three basic steps:

• Request. The client uses the web - browser, initiates a request to the server.

• Request processing, preparing a response. After receiving the request web - server performs the processing of the requested resource. If requested, the static resource such as HTML page, picture, document, this information is formatted for the HTTP protocol and sent to the client as a response. If requested by a dynamic resource, the request is passed on to the appropriate container processing web - applications , where it is further work .

• After formation, the data is transmitted to the client via HTTP as a response. The response contains data (usually HTML code, or binary data), as well as additional parameters passed to the HTTP response headers.

Job applications server side always follows the scenario described above. Obviously, this approach creates difficulties in creating web- applications, the main one being the lack of a condition in a web - application (the so-called stateless programming). This means that the application is only operated in the request-response without data on the previous steps of the user or any other constant information. To solve this problem, the notion of a user session, which allows you to store data on the server for a user session.

However, the presence of sessions difficulties in creating web - applications are not fully eliminated. The more opportunities provides a platform for the implementation of server-side applications to overcome these difficulties, the faster and more efficient can be developed. Next we consider various approaches to creating server-side applications, their advantages and disadvantages, as well as address the specific platform.

1.2.1 Requirements for server-side applications

When considering platforms for creating server-side applications must distinguish two major existing approaches:

• Direct query processing and shaping responses.

• Embedding code in HTML pages templates.

The first approach provides the greatest opportunity to manage the processing and increase productivity. It provides for the transmission of all the data of the request directly to the executable code that can both generate a response to the page for the user, and open to the transmission of a stream of binary data, such as image transmission. However, with this approach, all the data for transmission are generated by software, which slows down the development of simple pages and

complicates the interaction between layout designer and programmer. Examples of this approach are technology CGI, Java Servlets.

The second approach uses templates User pages decorated in a special way that allows you to insert them into sections of code. This approach is particularly effective in creating simple applications, basic information in which static and dynamic information can be generated by simple programming constructs. For developing complex software systems, this option complicates the interaction between the components and difficult to implement complex architecture. Also it is less effective in performance and limits the possibilities for the implementation of complex pages. Examples of this approach are very popular at the moment technology PHP, ASP, JSP.

In addition to different approaches to generate pages development platform to varying degrees meet modern requirements imposed to create complex Web systems. The most important of these requirements that make the system attractive for use are given below:

- Platform independence;
- Language implementation;
- Performance, scalability;
- Expansion and integration;
- Easy to use, the availability of development tools;
- Availability of necessary software libraries.

So, we have identified a number of requirements for modern development platform. The following are considered the most popular at the moment platform, their features, and evaluation in terms of the above criteria.

1.2.2 Overview of the basic technologies

At the moment, there are many technologies developed server side, both commercial and freeware.

Below are only the basic technologies potentially suitable for complex heterogeneous Web systems.

1. Technology Common Gateway Interface

Technology Common Gateway Interface (CGI), differs from other technologies considered in that it is the most low-level, and is a standard interface, which serves to link the external program with web- server.

The protocol itself is designed so that you can use any programming language that can work with standard I / O devices. Since this feature is available in the operating system, if you do not want a complicated script, it can be made into a batch file.

Consider the main advantages and disadvantages of CGI technology leased criteria:

• CGI imposes special conditions on the platform and web - server, so it works on all popular platforms and web - servers. The technology also is not tied to a specific programming language and can be used in any language, works with standard input / output streams.

• Performance CGI - program is not high. The main reason for this is that at the next access to the server for CGI - program is a separate process that requires a large amount of system resources.

• Built-in scalability, technology does not provide for this, developers have to take care of separately. CGI - the program is a file ready for execution, which prevents easy system expansion.

These reasons have led to what is now the development of CGI - applications prefer more advanced platform, providing more convenience to developers, having improved performance. However, the large mass of already developed applications makes reckon with technology CGI, and its knowledge is necessary for understanding the operation of high-level platforms.

2. Technology Personal Home Page

Technology Personal Home Page (PHP) are widely spread due to its free of charge and support the most popular platforms. It is based on the principle of

building pages from templates , first appeared in Active Server Pages, but develops and complements it. PHP pages have the form of ordinary HTML pages, which can be in the form special tags <? php? > . Tags are inserted between lines of code in a special scripting language PHP.

Principle templates allow developers to write programs much faster and without errors inherent in traditional CGI - program is the HTML content to the output stream . To date, the range of systems built on templates range from simple pages with samples from the database to the largest e-commerce applications based on XML. Formulaic system is very popular among developers as the most suitable for typical sites. Such solutions include ColdFusion, PHP, JSP and ASP, PHP of which is the most common.

Consider the main advantages and disadvantages of the platform:

• Applicable in PHP language is simple and convenient, but is not in the full sense of object-oriented;

• For PHP, there are extensive libraries, as well as lots of built-in functions for solving a variety of problems.

• When using PHP with Apache Web server software have the ability to effective execution of the kernel, as the expansion server. In other cases, low productivity platform.

• Own funds scaling PHP does not have all the features of clustering entirely borne by the Web - server and developers.

• Integration limited switching modules and using external functions that do not meet modern requirements.

PHP template approach, for all the great opportunities, hides serious drawbacks. Of common shortcomings of this approach, applicable to both PHP and ASP, JSP must include the following:

• File - page can only support a person fluent in both programming and HTML, which requires higher qualifications.

• One file at a time can edit only one person. This means that either works programmer or designer. It impossible to observe the division of labor where it is potentially possible.

• Storage of business logic in the files - pages distributed by the control elements as it leads to difficulty in rendering the objects of the second level.

• As a general result of the consideration of the platform can be concluded that, due to the ease of use, the presence of a large number of functions and libraries, distribution and support most of the existing Web - servers and platforms, PHP is a very convenient tool in the development of small systems. At the same time limits on performance, scalability, programming language and Extensibility and integration prevent the use of the platform in the development of large-scale systems.

3. Technology Java Servlets

Technology Java Servlets (servlets) was developed by Sun Microsystems, to take advantage of the Java platform to address technology and CGI API server extensions . Technology solves the problem of productivity, fulfilling all requests as threads in the same process. Servlets can also easily share resources, and does not depend on the platform, as done within Java Virtual Machine (JVM).

The technology has broad functionality. A large number of libraries provides a variety of tools necessary to develop. Java security model makes it possible to accurately control the level of access, such as allowing access to only certain parts of the filesystem. Exception Handling Java servlets makes more reliable measure than the expansion servers C / C + +.

Any servlet class is Java, and, therefore, must be made within the Java VM so-called servlet - container (servlet container, servlet engine). Servlet - container loads the servlet class at the first reference to it, either immediately when the server starts with special instructions. Next, the servlet is loaded for processing requests until it is unloaded explicitly, or to stop the container.

Technology is common, and can be used with all popular web - servers (Enterprise Server from Netscape, Microsoft Internet Information Server (IIS), Apache, Java Web Server from the Sun).

The software interface allows servlets to handle requests at any level, if necessary using any low-level data such as request headers , their type , etc. This gives greater flexibility in designing custom handlers, for example when working with binary or multimedia content.

Because servlets are processed in a single process by creating flows within it, the servlet code must be thread - safe. This imposes certain responsibilities on the programmer, but by standard techniques, such as avoiding the use of the fields in the Servlet class, and storage of data needed in the context or external storage such code properties are easily achieved. While servlets acquire such an invaluable advantage of scalability.

So, Servlets provide a component, platform - independent method for building web- applications without the performance limitations of CGI programs. They have a wide range of applications available API, allow you to use all the advantages of Java, easy to expand and scale, supported by all popular web - servers. All this makes them an excellent means of developing large web - systems.

4. Technology Java Server Pages

Technology Java Server Pages (JSP) from Sun Microsystems, was an add- on technology Java Servlets, providing a quick and easy development of web - applications through the use of a generic approach.

To understand the advantages of JSP architecture and technology you need to know Java Servlets, as they are closely related. Pages Java Server Pages represent a page template HTML, similar to templates PHP and ASP. The main difference from other similar technologies is that the code inside the special tags is not interpreted by reference to the page, and precompiled into a Java Servlet. Static parts of the template are translated into calls to functions for placing them in the output stream. The code is compiled as if it were within the servlet. Compilation of

JSP pages into servlets is time consuming, but is held once - either by first accessing the page, or when you start the servlet - container.

JSP technology successfully combines formulaic approach to the construction sites and all the benefits of the Java platform. Thanks to this technology is widespread among professional commercial developers and to create free public projects. An important step to expand the template approach are the so called tag libraries (tag libraries). This is a flexible opportunity to integrate standard, third-party or proprietary software components in the page. Easy to create and use led to the great popularity of tag library.

Thanks to the work based on Java, JSP technology is not tied to a particular hardware or software platform. Thus JSP are a great solution for heterogeneous environments.

Technology performance is limited by objective features of the architecture. First, the page should be compiled into a servlet, which takes considerable time. Secondly servlets run in the runtime Java, it interpretation mode. However, these limitations are compensated by additional features. Modern containers support server clustering that puts the burden on the hardware. It is economically feasible and simple solution. The task of compiling a single and servlets is performed either at the first call, or when you start the servlet - container. Thus it does not affect the overall system performance when considering for an adequate period of time.

The main advantages of JSP is the ease of development , characteristic fits-all approach , the presence of a large number of third-party libraries , ease of use, and a variety of powerful development environment. Due to all these factors JSP is the most promising basic technology development to create Web - sites. However, when creating complex Web - systems limitations imposed formulaic approach become a serious obstacle to development.

5. Technology Microsoft. NET and ASP.NET

Technology. NET is Microsoft's development and is reported as a new stage in the development of interoperability between applications. She is currently available as a supplement . NET Framework family of operating systems Microsoft

Windows, as well as new product Windows Server 2008. Also works on creation. NET Framework on other operating systems. Platform . NET simplifies application development and more reliable code. In particular, it provides automatic object lifetime management, language -neutral class libraries and crossing borders languages inheritance, exception handling, and debugging.

Basis .NET - Common Language Runtime (common language runtime languages) system services based on the operating system and manages the execution of code written in any modern programming language. Set of base classes gives access to the services platform, which developers can use from any programming language. Common Language Runtime and base classes together form the backbone. NET platform. NET also offers high-level services:

• ADO. NET - the new generation of ADO, which uses XML and SOAP to communicate;

• ASP. NET - A new version of ASP, allowing the use of any (. NET compatible) programming language for Web pages;

• Windows Forms and Web Forms - a set of classes for building the user interface of local and Web- oriented applications.

Deployment of the platform . NET performed in a special way. Source code is not compiled command processor x86 or other computer codes. Instead, the compiler generates code in an intermediate language Microsoft (Microsoft intermediate language - MSIL). File containing MSIL, can run on any processor platform, if the operating system provides .NET CLR.

Important part of the platform . NET is a new medium ASP.NET (previously used name of ASP +). ASP.NET features are so great that it is difficult to call the next version of ASP. It is based on a different platform, and major programming languages for her chosen C # and Visual Basic, instead of the former scripting languages. At the same time, this new technology allows for page writing ASP any suitable language.

In ASP.NET mortgaged everything to make the entire development cycle of web- applications faster and easier support. Below are the main features and principles of ASP.NET.

• Compiling the code at the first call;

• Wide range of component libraries supplied with . NET;

• Supports powerful development tools - Visual Studio.NET;

• Language independence within platforms that implement the general language runtime CLR;

• Expansion using multiprocessor and clustered solutions;

• New opportunities for error handling;

• Object-oriented development languages (C #, a new language);

• Enhanced ability to reuse components.

It is obvious that platform . NET and ASP.NET provide new opportunities for the development of Web - systems. They meet all modern requirements and can greatly speed up and simplify the development of complex applications.

From consideration the following main approaches to the architecture of server applications:

1. Individual queries. Each time you request dynamic content to run a separate program for processing requests. The program generates the content sent to the client. This approach is used in conventional CGI- scripts.

2. Accumulation of executable processes. Approach is similar to the previous one, but if the query is executed repeatedly, a new start of the program occurs and processing is passed to an existing process. This approach is used in technologies Java Servlets, Fast CGI.

3. Layouts. When prompted templates are filled with dynamic content, usually, but not necessarily generated interpreted scripting language. Approach is used in technologies ASP, JSP, PHP.

4. Extensions web - server. Web - server refers to specific extensions to handle dynamic content. Extensions specific to the web - server. This approach is used in the IS API, NSAPI, mod_perl.

1.4 Determination of the functional structure and the appointment of the National Catalog Developers and Software Products software.uz

The needs of organizations in the software products begins to grow. Number of software development companies offering their services, and constantly increases, responding to the demand for information systems. However, expectations of customers and developers are not always satisfied. Therefore, to customers is always difficult questions: "Whom to hire as a developer?", "How to get and meet the demand for information systems?". And the developers - "What do you need the software market ?", "What is a niche market software to take ?", "How to gain a competitive advantage against other players in the market?".

Answers to these questions lie in the plane of relations lying between customers and developers, since the decision on the need of the customer placing an order for the software, and the last moment of entry into operation software and its further maintenance.

After examining the complex process of software development, the roles and expectations of the customer and the developer, it was decided on the basis of the portal software.uz create an electronic platform.

In accordance with the technical specifications set forth following the appointment of the National Catalog Developers and software product (catalog):

- Maintenance and retrieval of information about domestic software products;
- Maintenance and retrieval of information on domestic software developers;
- To provide a platform for placing orders for software and services in the field of information technology, including outsourcing;
- To provide a platform for freelancers;
- Placement of resumes, vacancies, and the like;
- Ranking of developers and software products;
- Providing users access to software and information resources on ICT in the form of articles and reports;
- Provision of interactive services, public authorities and economic entities.

1.3.1 Basic technical solutions

Structure of the system is modular and includes the following main components:

- Catalog;
- Projects;
- Freelancers Exchange;
- Information section;
- Blog;
- Analytics.

Comfort modular architecture for the information system that when implementing user defined function is activated system specific module that improves performance and response time to user actions.

Especially important is the modular design principle systems using portal solutions, and thus operating in the Internet. For the user, it is important and time each page load, and speed of implementation functions, and of course expended traffic. Therefore, system modules interact on the basis of functional relationships.

1.3.2 Roles in the Catalog

Portal users are divided into 4^{th} category:

• Governments;

• Business entities;

• Companies developers;

• Individual developers (freelancers)

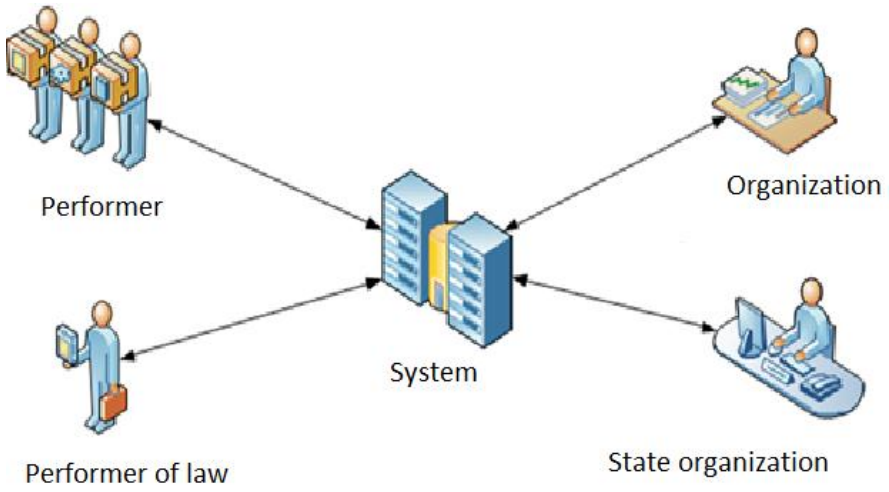

Figure 1.3. Roles in the Catalog

For each of these identified features and role. So government agencies may search and developers interested in software products directory partition, place orders for software products in the "Projects" section. Assistance in selecting the performer(s) must be rated keeping software and developers.

For developers, in turn, it is possible to organize the complete information about yourself to make placing information on their previous completed projects and produced software products, as well as to place a request for participation in the order.

"Projects" section. Model of the interaction of the customer and the developer or the life cycle is as follows. State authority places an order for agencies holding up information about the requirements, timing , cost, and sticking TOR. Interested developers are preparing their quotations and create applications for the project. This ensures confidentiality of the information transmitted from the developer to the customer and vice versa. After that, the customer chooses the performer. If the performer confirms readiness to proceed with the implementation, the order is changed to an "under construction".

1.3.3 Description of the functional structure of the Catalog

National Registry subsystem software developers include the following elements:

- Private offices ;
- News of the registry;
- Normative - legal acts of the registry;
- Developers ;
- Administration subsystem registry.

National catalog subsystem developers and software products include the following elements:

- Subsystem " Directory " ;
- Subsystem " Projects " ;
- Subsystem "Freelancers Marketplace " ;
- Subsystem "Analysis " ;
- Subsystem " Blog " ;
- Subsystem " section Information " ;
- Administration subsystem catalog.

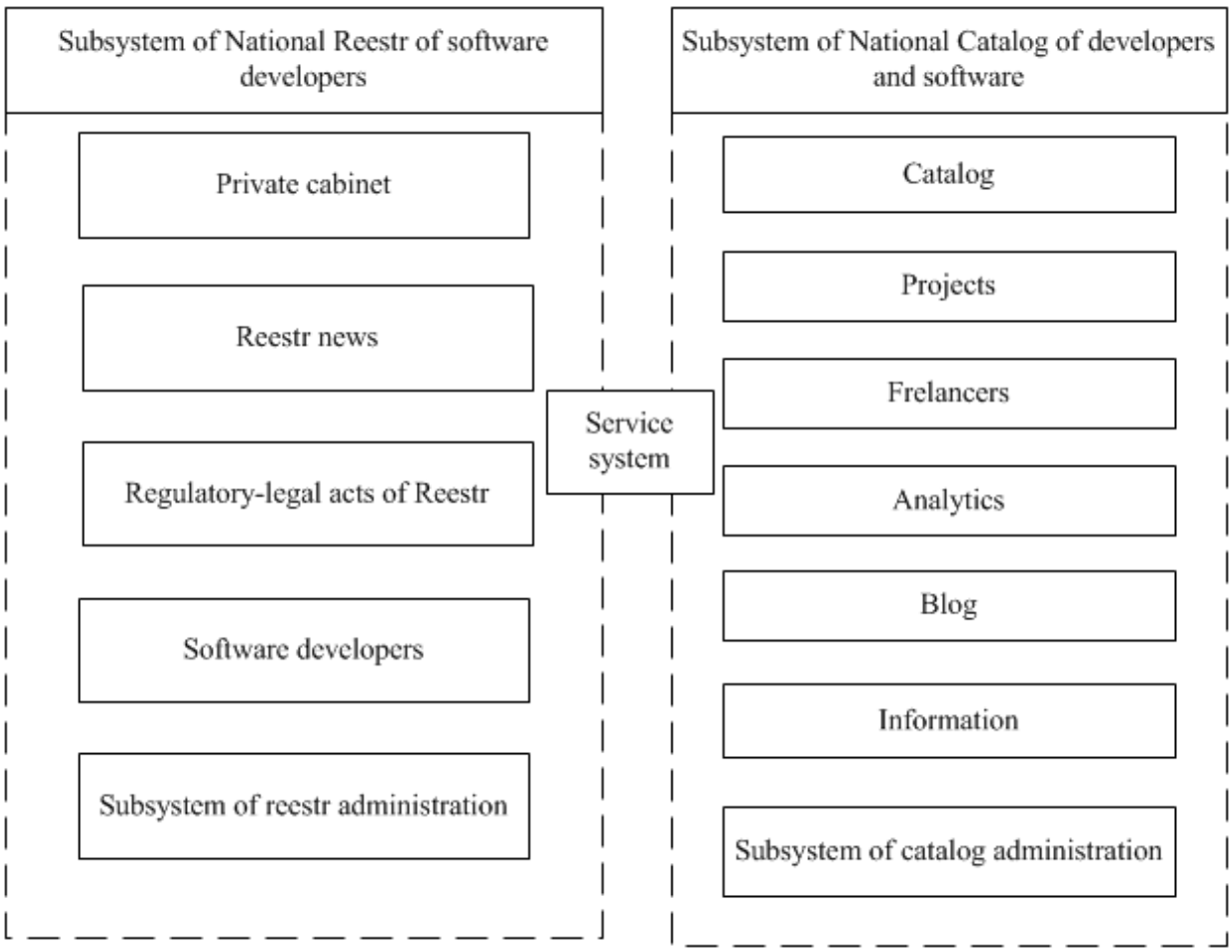

Figure 1.4 Elements of functional structure

1.3.4 Informational connections between the elements and the external environment

The external environment to the system is the user who is viewing data (if not registered in the system), and the interaction with system partitions is determined by its access rights after registration.

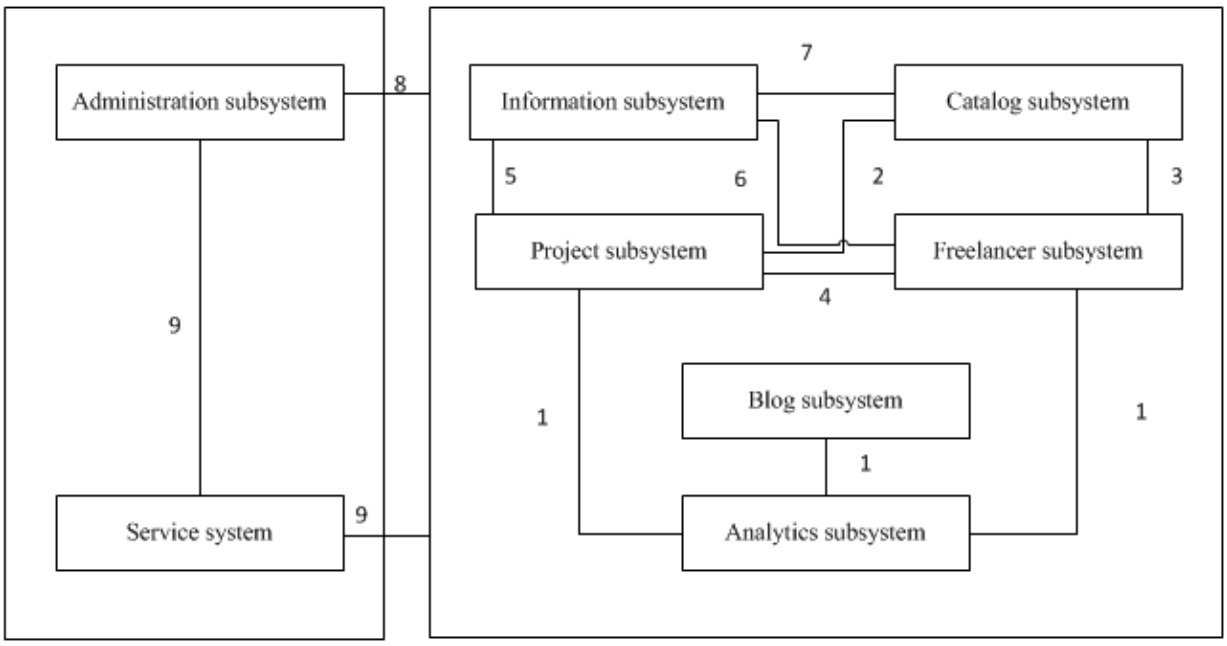

Figure 1.5 Functional structure of the National Directory of Software Design

Notation relations Figure 5:

1. Using data to generate statistical data;
2. Using information about the company of performers;
3. Use information about freelancers;
4. Interactions on request;
5. Using CRP data subject;
6. Using data Freelancers (physical performers);
7. Firms Using data Performers;
8. Management ;
9. Using services without the possibility of changing the data.

The scheme shows that the subsystem "Analytics" uses data subsystems "Projects", "Blog " and " Exchange freelancers " to prepare an integrated analytical information.

Source for the subsystem "Analytics" data in the "Projects" are inserted into the section " Orders". To manage their own orders must select My Projects submenu. To do this, you must go to the link for details.

Then available for editing or order, or rather its narrative. To do this, you must immediately go to Edit link.

But in order to change the documentation support order must pass after a detailed view on the document link.

Then either download the necessary documents from your computer or edit an already loaded (load other data exchange) .

Next you want to make sure to preserve the actions.

To keep the review of the project is necessary to select the submenu My projects. To do this, you must go to the link for details. Then clicking on the link your review to submit a form filled content reviews.

Next you want to make sure to preserve the actions.

To view the reviews after selecting a submenu My projects need to follow the link Reviewed. After the transition to Talkback can view comments.

When the order is complete, the user may leave two ways.

Firstly, it is possible to link to details, and then select your review.

Secondly immediately available link Reviewed by going through it, you can get directly to the page Reviews.

After performing the two options, the user is a form to fill in the content review. Then you need to save the data.

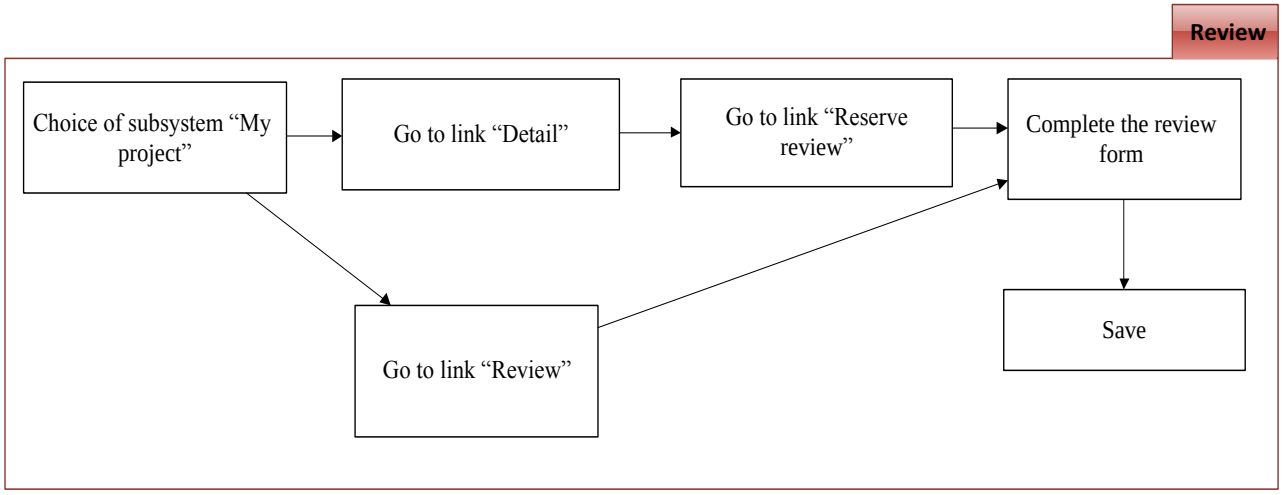

Figure 1.6 Detailed scheme of "Projects (review)"

Go to Products page will jump to view products . Select action , will go to the page to add , where to submit the form to enter a description of the product , and then entered the data is stored . Edit mode and is available with the removal of at least one product.

For portfolio management, you need to select the submenu after products go to the Portfolio view. You can then add portfolio, fill in the appropriate fields and save your entries. Only in the presence Portfolio can edit or delete it.

Chapter one summary

As a result, established the following.

1. Necessity of implementing the catalog in the form of an Internet portal, as the nucleus of a professional social network.

2. According typing catalog is implemented as a vertical web portal.

3. A comparative analysis of the technological platforms, the results of which are presented in tabular form.

	PHP	Java Servlets	JSP	ASP .NET
Multiplatform	+/-	+	+	+
Performance	-/+	+/-	+/-	+
Scalability	-	+	+	+
Implementation language	+/-	+	+	+
Expandability and integration	-	+	+/-	+
Ease of use, availability of development tools	+/-	+/-	+	+
Availability of the necessary software libraries	+	+	+	+
Separating the logic and design of	+/-	-/+	+/-	+

where "-" is the total lack of support, " - / + " - the lack of support , "+ / -" - support is not in full, and "+" - full support.

Based on the analysis made the choice of technology ASP.NET

4. The basic function of the subsystem "Analytics".

- Automatic collection of analytical information from the catalog partition;
- Automatic systematization of analytical information on the specified criteria;
- Graphical representation of analytical reports.

Development of the subsystem data collection, analysis and reporting of developers and software

2.1 Description of subsystems "Analytics"

Analysis subsystem provides statistical information on the number of software products by industry, of queries in the field of information and communication technologies, analytical data in the production of software products, as well as survey data.

Scheme of automation of analytical data collection process:

Analysis section allows you to visualize (in chart form) to submit statistics needs and proposals for the development of certain types of services and categories of software products at the time of formation of the request.

The data collection process to be analytics, begins with the formation of the request. The data is then removed from the database, analyzed and displayed in a chart. Results can be downloaded analysts.

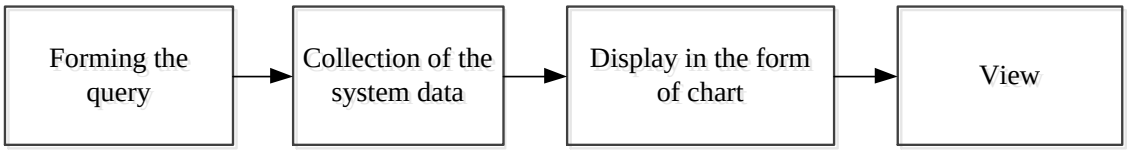

Figure 2.1.Process of data collection

2.2 Structure of the database

For your web application requires a database, which stores information regarding lessons and users.

In accordance with the task were selected from the database table «software.uz». That have been confessed to the Microsoft SQL Server 2008 R2.

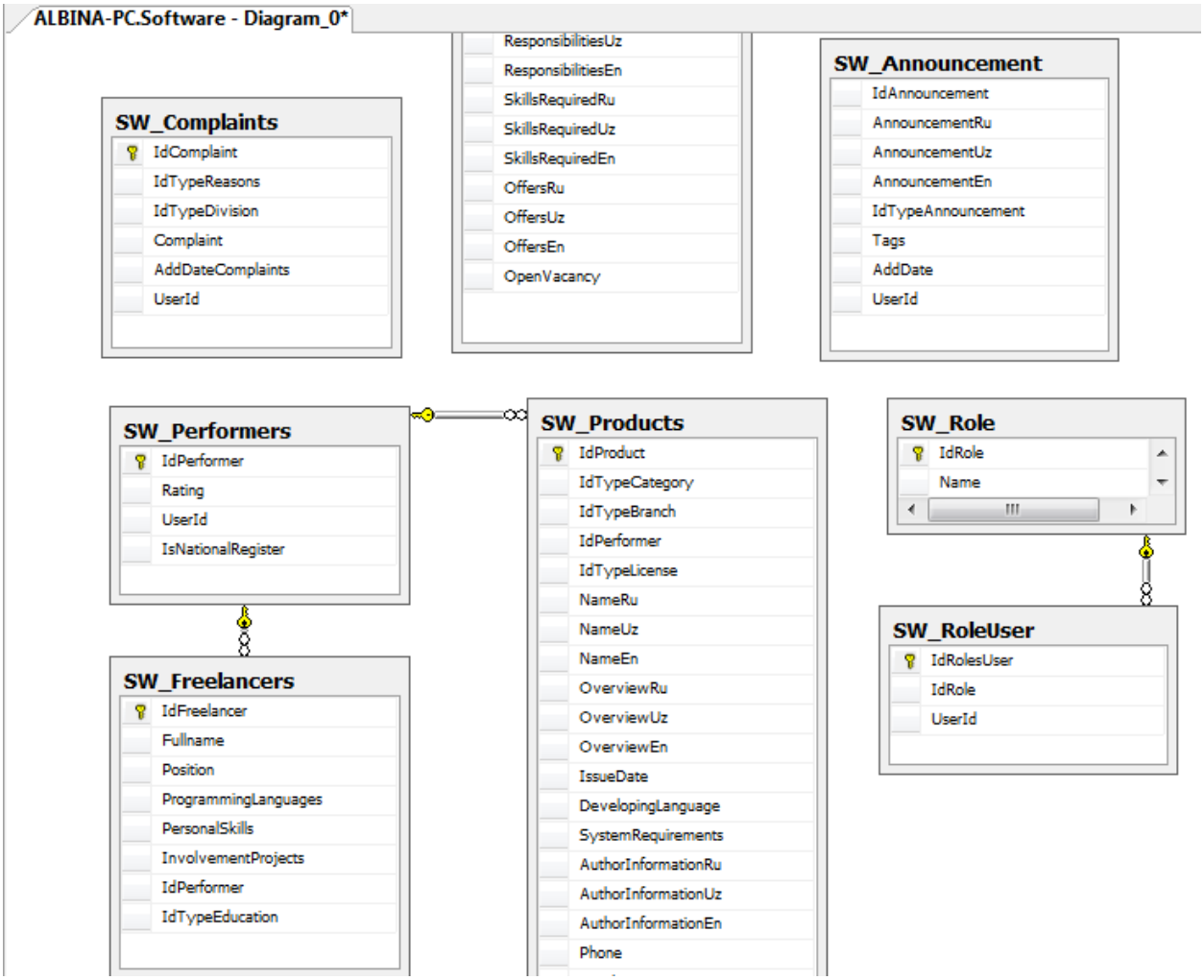

Figure 2.2. Diagram of database

The following describes the structure of each table and views.

Table 2.1 Database directory

Property name	Description	Name of tables in the database
"Projects"		
Status of the project / service	Name	TypeOfConditions

Comments about project	Order the project (link), Client (link), evaluations, Artist (link)	ProjectReviews
Reviews	Booked services (link), Client (link) , Evaluations, Artist (link)	ServiceReviews
Ordered services	Services (link), Artist (link) , Client (link)	OrderedServices
Status ordered projects	Services (link), Artist (link) , Client (link) , Project Type , Date , Description , Requirements , Application deadline , Price , Name, Date of registration of the project , The project completion date , Language	OrderedProjects
Document templates project	Document name, Path of the document, Order the project (link) , Booked services (link), Company (link)	TemplatesDocuments
Documents for application	Artist (link), Document name, Ordered projects (link)	Documents

The application for the project	File to load annotations , Duration (in months) , Duration (years) , Duration (in weeks) , Duration (days)	ExecuteProjectOrder
Application for a service	Application for a service path to the file, Duration (years) , Duration (in months) , Duration (weeks) Cost	ExecuteServiceOrder
Evaluation Product Features	Name	TypeOfMarkProduct
"Users"		
PPRC	Artist (link) , Client (link) About the organization , year of education, Logo , Organization Type	Organization
Freelancers	Freelancers, Name, Position, Programming languages and skills, Participation in projects, Type of education	Freelancers
Ownership	Title	TypeOfOwnership
Services rendered	Services (link), Company (link)	OrganizationService
Services	Title	TypeOfServices

User	User Address , Website, Telephone, Fax , Password , Moderator blog , Registered , Created , Salt for a password, Comments , Date last modified, Last login date , Last release date, Blocking Activation link with el. mail , Lock administrator Last date unlock administrator Cause last unlock the administrator Password for the key , Request new password , New mailbox key New mailbox Request new mailbox, Type the user (Administrator , Freelancer , Artist Organization , Customer organization)	User
"Analytics"		
Surveys	Survey (link) Username	Surveys SurveyUser
Questions	Questions Survey	Questions
Answers	Question (reference) , Answer, Number of respondents	Answers

"Complaints"		
Reasons	Name	TypeOfReasons
Complaints	Complaint , Date , User Name , Section Complaints	Complaints
"Information Section"		
Software	Title, Description, Path, Tags	Softwares
News	News (text) , Picture, Title News , Resource Links , Tags , Date , Section	News

2.3 Description classes of the software

Structure software:

Software structure is represented as a list of classes, differentiated by type:

Class of Provider provides a link to the database (P).

Class Bridge provides the business logic in the system (B).

Class Container provides a representation of the data (C).

Classes Auxiliary provide cryptography system (A).

Classes Handlers pages cs react to events, committed a specific page (H).

Table 2.2 List of classes

Class Provider	Type of class
ProviderCompletedOrderedProjects.cs	P
ProviderOrganizationDeveloper.cs	P
ProviderPerformerCategory.cs	P
ProviderPerformerService.cs	P
ProviderProduct.cs	P
ProviderProductDatabase.cs	P
ProviderProductMarks.cs	P
ProviderProductPlatform.cs	P
ProviderService.cs	P
ProviderClient.cs	P
ProviderComplaint.cs	P
ProviderOrganizationClient.cs	P
ProviderOrganizationPerformer.cs	P
ProviderPerformers.cs	P
ProviderRole.cs	P
ProviderRoleUser.cs	P
ProviderUser.cs	P
Provider.cs (основной, наследуемый)	P
ProviderIMagazin.cs	P
ProviderTypeDeveloper.cs	P
ProviderTypeOfAnnouncement.cs	P
ProviderTypeOfBranches.cs	P
ProviderTypeOfCategory.cs	P
ProviderTypeOfConditionRequestNationalRegister.cs	P
ProviderTypeOfConditions.cs	P
ProviderTypeOfContent.cs	P

ProviderTypeOfDatabase.cs	P
ProviderTypeOfDivision.cs	P
ProviderTypeOfEducation.cs	P
ProviderTypeOfLaw.cs	P
ProviderTypeOfLicense.cs	P
ProviderTypeOfOrganizationalForm.cs	P
ProviderTypeOfOwnership.cs	P
ProviderTypeOfPlatform.cs	P
ProviderTypeOfProductQualityAssessmentCriteria.cs	P
ProviderTypeOfReasons.cs	P
ProviderTypeOfServices.cs	P
ProviderTypeOfSettlement.cs	P
ProviderFreelancer.cs	P
ProviderHomePage.cs	P
ProviderAnnouncements.cs	P
ProviderLaws.cs	P
ProviderNews.cs	P
ProviderResume.cs	P
ProviderSoftware.cs	P
ProviderSubDivisionUser.cs	P
ProviderSubscribe.cs	P
ProviderVacancy.cs	P
ProviderNRRequestSolutionsDecision.cs	P
ProviderDocument.cs	P
ProviderExecuteProjectOrder.cs	P
ProviderExecuteServiceOrder.cs	P
ProviderNotification.cs	P
ProviderOrderedProject.cs	P
ProviderOrderedService.cs	P

ProviderProjectReview.cs	P
ProviderServiceReview.cs	P
ProviderTemplateDocument.cs	P
DataClient.cs	B C
DataOrganizationClient.cs (*main*)	B C
DataOrganizationPerformer.cs (*main*)	B C
DataPerformers.cs	B C
DataRole.cs	B C
DataRoleUser.cs	B C
MemberProviderUser.cs	B C
DataDirectory.cs(наследуемыйсправочниками)	B C
DataFreelancer.cs (*main*)	B C
DataVacancies.cs	B C
DataSubscribe.cs	B C
DataProduct.cs	B C
ICTOperator.cs (*main*)	B
DataOrganizationDeveloper.cs	C
DataPerformerCategory.cs	C
DataPerformerService.cs	C
DataProductDatabase.cs	C
DataProductMarks.cs	C
DataProductPlatform.cs	C
DataService.cs	C
DataTypeOfAnnouncement.cs	C B
DataTypeOfBranches.cs	C B
DataTypeOfCategory.cs	C B
DataTypeOfConditionRequestNationalRegister.cs	C B
DataTypeOfConditions.cs	C B
DataTypeOfContent.cs	C B

DataTypeOfDatabase.cs	C B
DataTypeOfDeveloper.cs	C B
DataTypeOfDivision.cs	C B
DataTypeOfEducation.cs	C B
DataTypeOfLaw.cs	C B
DataTypeOfLicense.cs	C B
DataTypeOfOrganizationalForm.cs	C B
DataTypeOfOwnership.cs	C B
DataTypeOfPlatform.cs	C B
DataTypeOfProductQualityAssessmentCriteria.cs	C B
DataTypeOfReasons.cs	C B
DataTypeOfServices.cs	C B
DataTypeOfSettlement.cs	C B
DataAnnouncements.cs	C
DataLaws.cs	C
DataNews.cs	C
DataResume.cs	C
DataSoftwares.cs	C
DataSubDivisionUser.cs	C
DataNRRequestSolutionsDecision.cs	C
DataDocument.cs	C
DataExecuteProjectOrder.cs	C
DataExecuteServiceOrder.cs	C
DataNotification.cs	C
DataOrderedProject.cs	C
DataOrderedService.cs	C
DataProjectReview.cs	C
DataServiceReview.cs	C
DataTemplateDocument.cs	C

MailNotifier.cs	A
Cryptography.cs	A
RepositoryUser.cs	A B
Account.Login	H
Account.LoginOpenID	H
Account.RestorePassword	H
Admin_Pages.AccountAdmin.Login	H
Admin_Pages.Freelancer.Complaints	H
Admin_Pages.Freelancer.Controls.LeftMenu	H
Admin_Pages.Information.DetailedNews	H
Admin_Pages.Announcement	H
Admin_Pages.Information.Announcements	H
Admin_Pages.Information.DetailedNews1	H
Admin_Pages.Information.EditNewsForAdmin	H
Admin_Pages.Law	H
Admin_Pages.Information.Laws	H
Admin_Pages.Information.SoftwaresToDownload	H
Admin_Pages.SoftwareToDownload	H
Admin_Pages.Users.AllUsers	H
Admin_Pages.Users.EditUser	H
Admin_Pages.Users.NotificationMailNewUser	H
Admin_Pages.BlockingUser	H
Admin_Pages.LeftMenu	H
Admin_Pages.MainPage	H
Admin_Pages.ReferenceBooks	H
Admin_Pages.ReferenceBooksSettlement	H
Admin_Pages.RightMenu	H
Admin_Pages.Site1	H
Analytics_Pages.MainPage	H

Catalog_Pages.DetailedProduct	H
Catalog_Pages.DetailProfile	H
Catalog_Pages.DraftDocNationalRegister	H
Catalog_Pages.PerformersOrganization	H
Catalog_Pages.Product	H
Catalog_Pages.Products	H
Catalog_Pages.Profile	H
Catalog_Pages.Service	H
Catalog_Pages.Services	H
Common_Pages.DetailCategory	H
Common_Pages.MySubscribe	H
Common_Pages.NationalRegister	H
Common_Pages.NecessaryCategory	H
Controls.ForClientControl.proposal	H
Controls.InfomationControls.Contacts	H
Controls.InfomationControls.ContolViewNews	H
Controls.InfomationControls.ControlDetailNews	H
Controls.InfomationControls.ControlEditNews	H
Controls.Language.UserLanguage	H
Controls.Menu.MainMenu	H
Controls.Filter	H
Controls.GlobalRightMenu	H
Controls.LastAnnouncementHome	H
Controls.LastFreelancerRegister	H
Controls.LastFreelancerRegisterHome	H
Controls.LastNews	H
Controls.LastNewsHome	H
Controls.LastOrganizationClient	H
Controls.LastOrganizationHome	H

Controls.LastProductsHome	H
Controls.LastProject	H
Controls.LastResumeHome	H
Controls.LastVacanciesHome	H
Controls.ProductQualityAssessmentCriteria	H
Controls.PortfolioCatalog	H
Controls.PortfolioFreelancer	H
Controls.SubscribeUser	H
Controls.TopFreelancers	H
Controls.TopOrganizations	H
Controls.TopProducts	H
Freelancer_Pages.LeftMenu	H
Freelancer_Pages.Complaints	H
Freelancer_Pages.DetailedProjectOrder	H
Freelancer_Pages.DetailProfile	H
Freelancer_Pages.Documents	H
Catalog_Pages.Freelancers	H
Freelancer_Pages.GivenOffers	H
Freelancer_Pages.MyNotifications	H
Freelancer_Pages.MyOffersFreelancer	H
Freelancer.uz.Pages.Profile	H
Freelancer.uz.Pages.ProjectOrder	H
Freelancer_Pages.ProjectOrders	H
Freelancer_Pages.ProjectReviews	H
Freelancer_Pages.SearchPerformer	H
Freelancer_Pages.ViewStateOfProjectForFreelancer	H
Information_Pages.Controls.LeftMenu	H
Information_Pages.AllNews	H
Information_Pages.Announcement	H

Information_Pages.Announcements	H
Information_Pages.DetailedAnnouncement	H
Information_Pages.DetailLaw	H
Information_Pages.DetailedNews	H
Information_Pages.DetailedResume	H
Information_Pages.DetailedVacancy	H
Information_Pages.Law	H
Information_Pages.Laws	H
Information_Pages.Resume	H
Information_Pages.Resumes	H
Information_Pages.SoftwaresToDownload	H
Information_Pages.SoftwareToDownload	H
Information_Pages.Vacancies	H
Information_Pages.Vacancy	H
NationalRegisterPages.Information.About	H
NationalRegisterPages.Information.Contacts	H
NationalRegisterPages.Information.DetailedNewsNationalRegister	H
NationalRegisterPages.Information.EditNationalRegisterLaws	H
NationalRegisterPages.Information.EditNationalRegisterNews	H
NationalRegisterPages.Information.IMagazin	H
NationalRegisterPages.Information.MagazinAdd	H
NationalRegisterPages.Information.NationalRegisterLaws	H
NationalRegisterPages.Information.NationalRegisterNews	H
NationalRegisterPages.ManipulateOrganization.AddOrganizationIntoNationalRegister	H
NationalRegisterPages.ManipulateOrganization.DetailedRequestFromOrganization	H
NationalRegisterPages.ManipulateOrganization.ExcludeFromNationalRegister	H

NationalRegisterPages.ManipulateOrganization.Register	H
NationalRegisterPages.ManipulateOrganization.RequestFromOrganization	H
NationalRegisterPages.NationalRegisterAccount.LogInSystem	H
NationalRegisterPages.NationalRegisterControl.Menu.LeftGlobalMenu	H
NationalRegisterPages.Registration.Agreement	H
NationalRegisterPages.Registration.CheckActivationKey	H
NationalRegisterPages.Registration.FinishRegistration	H
NationalRegisterPages.Registration.IntroductionRegister	H
NationalRegisterPages.Registration.SecondStage	H
NationalRegisterPages.MainPage	H
NationalRegisterPages.Site1	H
Page.about	H
Page.Contacts	H
Page.Error401	H
Page.Map	H
Page.NationalRegulations	H
Page.SystemIntegrator	H
Project_Pages.DetailedProjectOrder	H
Project_Pages.DetailProfile	H
Project_Pages.Documents	H
Project_Pages.GivenOffers	H
Project_Pages.MyNotifications	H
Project_Pages.MyOffers	H
Project_Pages.Profile	H
Project_Pages.ProjectOrder	H
Project_Pages.ProjectOrders	H
Project_Pages.ProjectReviews	H

Project_Pages.SearchPerformer	H
Project_Pages.ViewOrganizationClient	H
Project_Pages.ViewProposal	H
Registration.CheckActivationKey	H
Registration.FinishRegistration	H
Registration.FirstStage	H
Registration.SecondStage	H
Registration.ThirdStage	H

2.4 Results of implementation

To get access to view analytical data need to go to the "Analytics". Access to the data is unlimited.

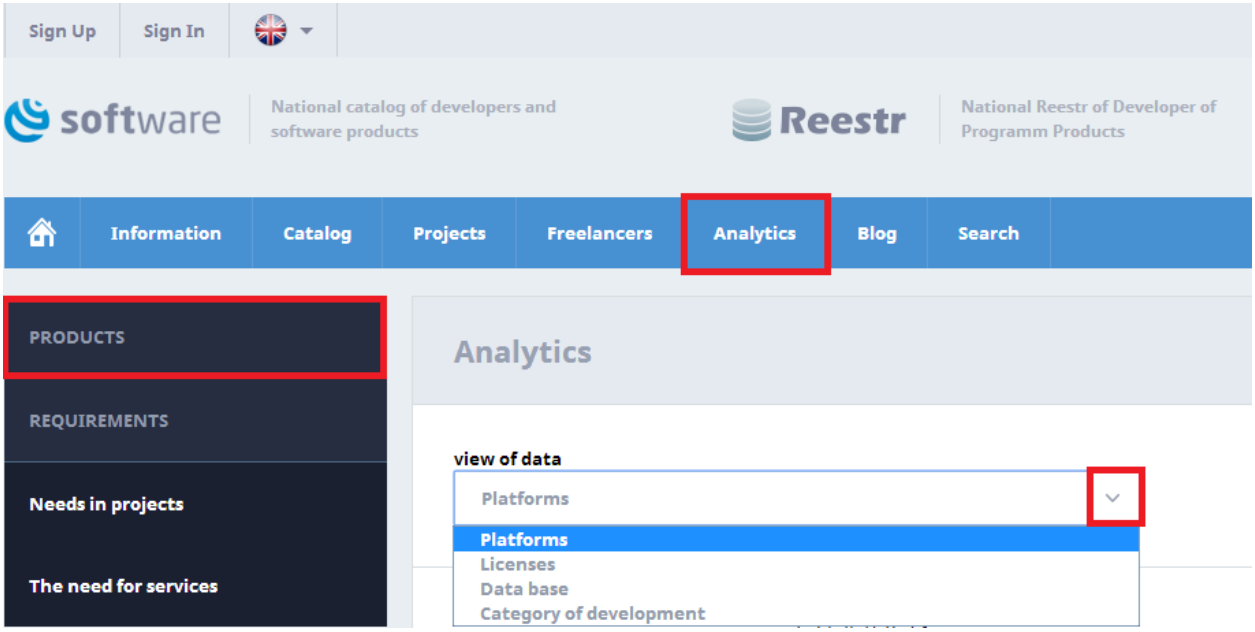

Figure 2.3. Entrance to subsystem "Analytics"

Tools are located on the page links to each form analytic representation:

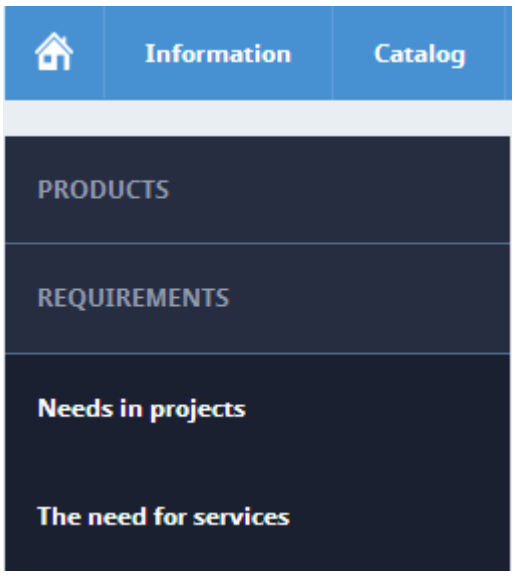

Figure 2.4. Navigation

When you click on any of them shows all the content relating to this category, for example when viewing products appears one of the diagrams:

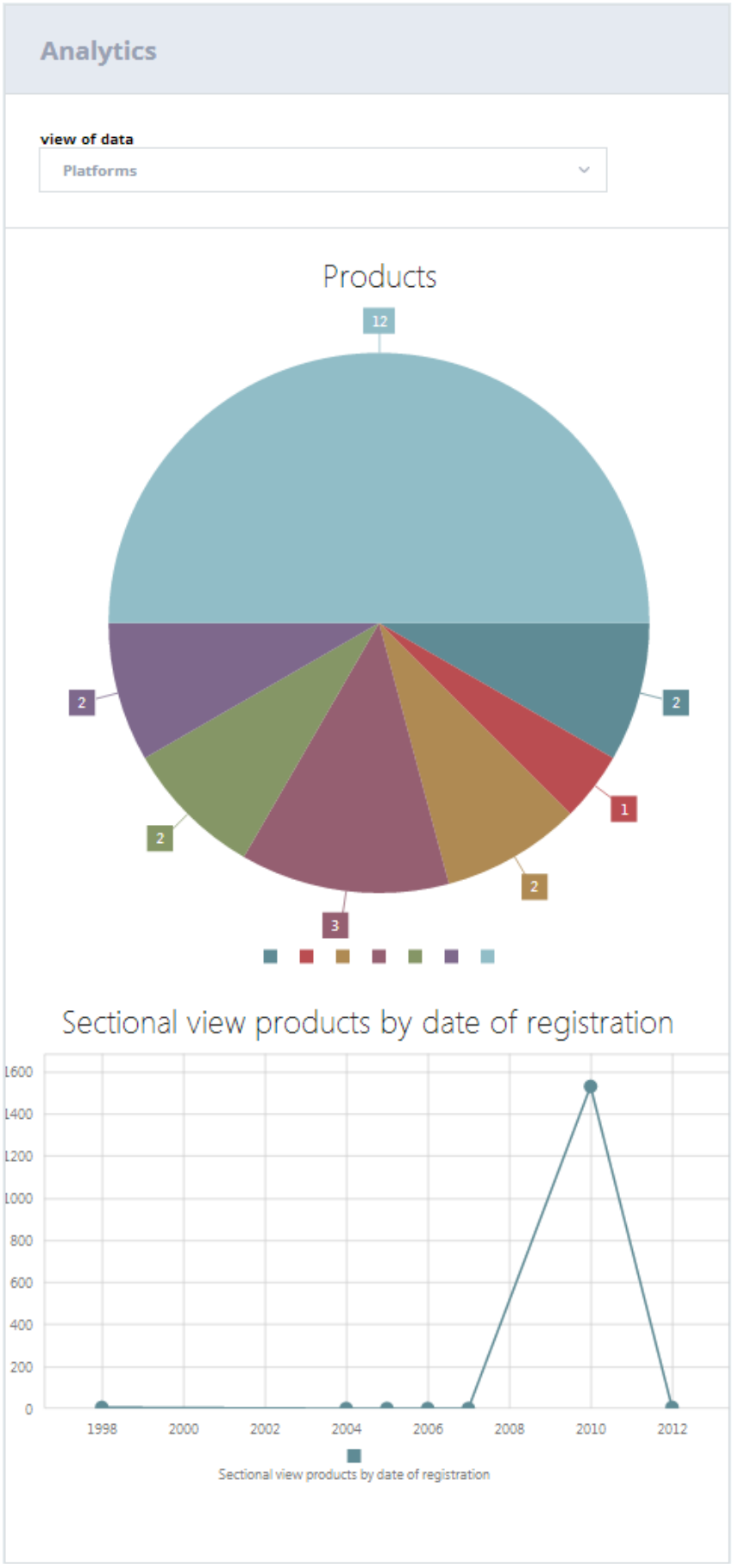

Figure 2.5. Products

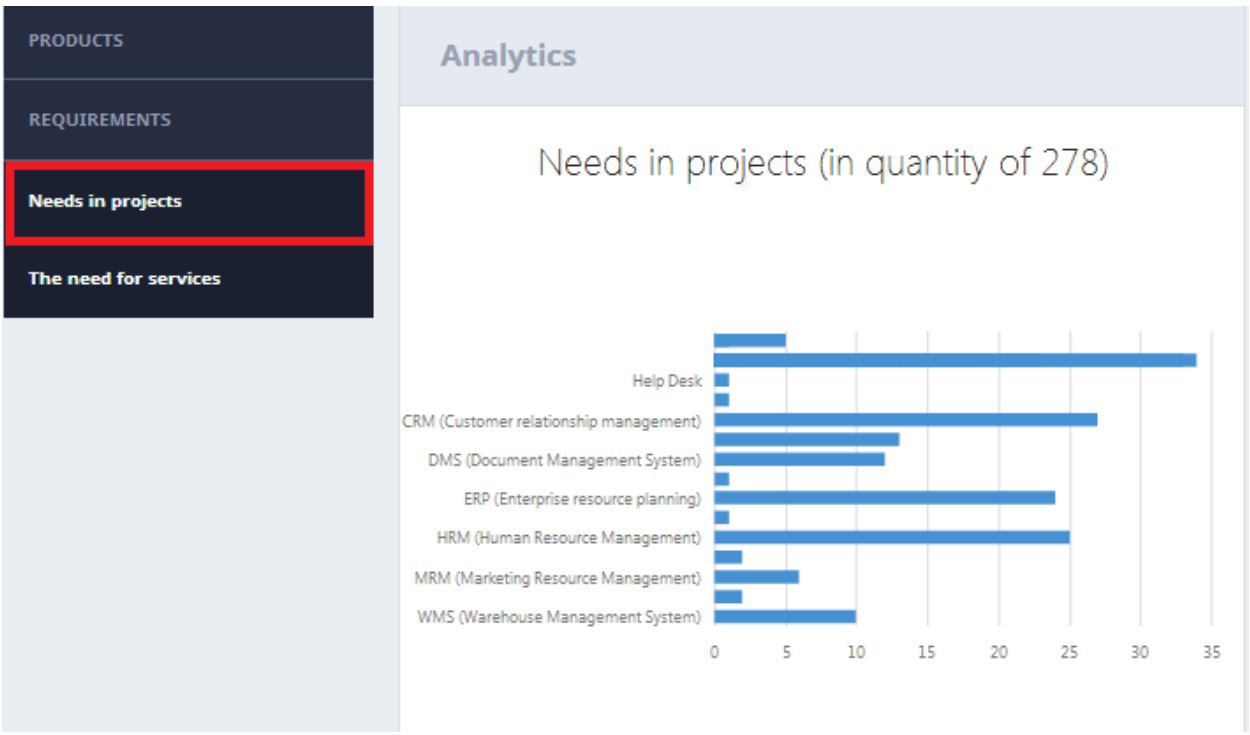

Figure 2.6. Needs in project

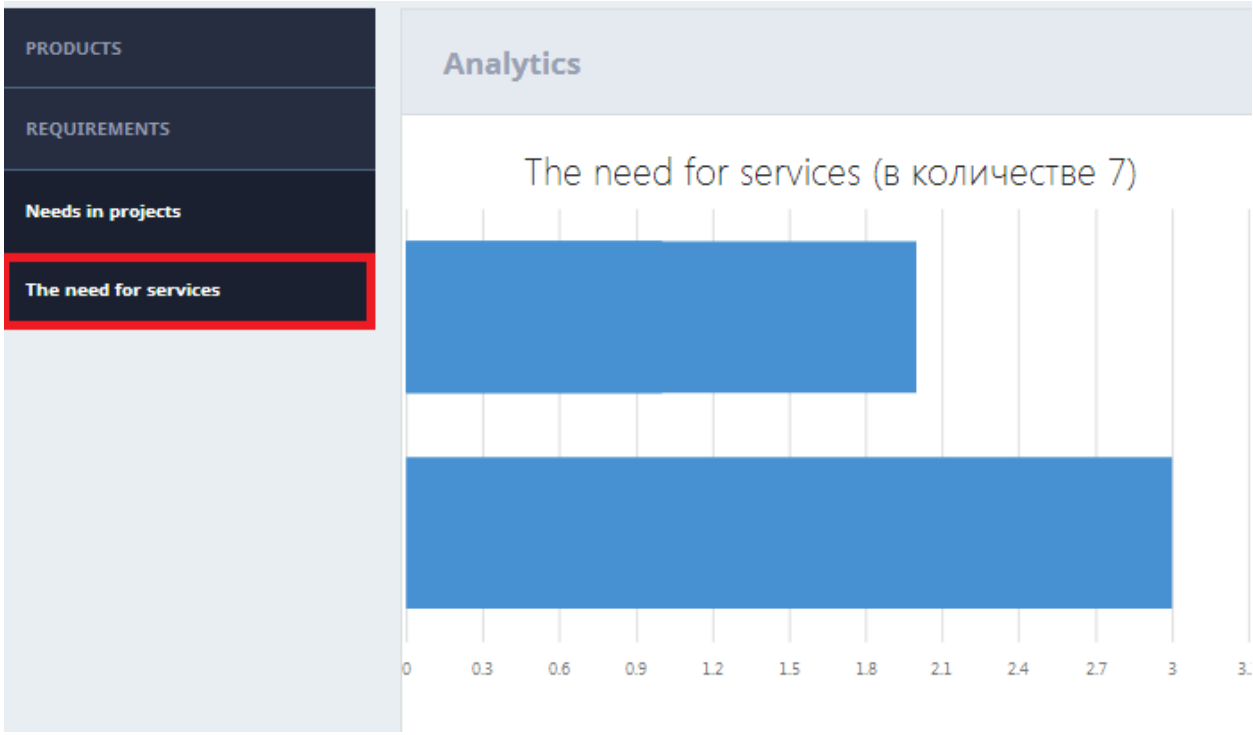

Figure 2.7. Needs for services

Chapter two summary

As a result, the following was performed:

1. A scheme for automating the collection of analytical data.

2. The structure of the software in the form of tables classes.

3. Developed information arrays.

4. Produced in the current implementation of the subsystem catalog. Results of implementation are presented in the form of screenshots of graphical representations of analytical reports.

Life Safety

3.1. Identify the main ways and forms of organization of health mental and physical labor in order to increase efficiency

Occupational health or occupational health, hygiene industry, studying the impact on the human body of work processes and the human work environment and hygienic standards and develops measures to ensure good working conditions and the prevention of occupational diseases.

Research carried out in the following directions:

- Physiology of labor processes and their effects on the body and development of measures to prevent fatigue and increase productivity;
- Industrial Toxicology (development of maximum allowable concentrations of toxic substances in production environments, and activities for the prevention of occupational intoxication);
- Study of the various types of industrial dust and the development of its maximum permissible concentrations in the air of industrial premises, methods of prevention of occupational dust diseases (pneumoconiosis);
- Study the effects of physical factors on the organism foreign production environment (weather conditions: ionizing radiation, noise and vibration, electromagnetic waves of radio frequencies, etc.); development of preventive measures for the prevention of occupational diseases that may cause these factors.

In terms of industrial production per person is often affected by low and high temperature, strong thermal radiation, dust, harmful chemical substances, noise, vibration, electromagnetic waves, as well as various combinations of these factors that can lead to some disturbances in health to a decrease in efficiency.

To prevent and eliminate these adverse effects and their consequences is held

- study of the features of production processes, equipment and processing materials (raw materials, auxiliaries, intermediates, by-products, waste products) in terms of their effects on the body work;

- sanitary conditions (meteorological factors, air pollution by dust and gases, noise, vibration, ultrasound, etc.); the nature and organization of work processes, changes in physiological functions in the process.

Detailed study of the health status of workers (general and occupational diseases), as well as the status and effectiveness of hygienic sanitation facilities and installations (ventilation, lighting), sanitary and domestic equipment, personal protective equipment.

Embedded in-line and conveyor-assembly lines, mechanization and automation of labor processes, freeing up working from heavy physical exertion, more demanding, especially to the state of the nervous system and vision. When performing such work is essential to establish a regime of work and rest that it provides high productivity without disrupting the physiological reactions of the body throughout the work shift.

The main forms of organization of health mental and physical labor are.

Organizational activities.

This group includes activities aimed at optimizing labor regime, the rhythm of the labor process, the ratio of work and rest, correct sequence of work operations, ensuring industrial aesthetics, optimum layout etc. to minimize adverse effects on the harmful factors of working environment, maintain efficiency and prevent fatigue.

To maintain high efficiency and prevent fatigue should be working to make breaks with a clear definition of their time and duration. Of these two important moments develops a rational mode of work and rest. Improving efficiency and the development of fatigue naturally alternate during the work shift. Labor productivity may decline long before the lunch break, which depends primarily on the nature and intensity of the work. The harder and harder work, the sooner it is necessary to establish short breaks after the start of the shift.

Duration of rest intervals are determined based on the experimental study of various combinations of work and rest periods. Naturally, for all types of compulsory lunch break in the middle of the workday. Regulated breaks are set

depending on the severity of the work, with the break time should correspond to the initial stage of fatigue. Duration breaks ranges from 5-10 to 15-30 minutes. Thus, the hourly productivity of weavers in 7-hour day with a lunch break additional 10 minute rest increased by 3.45%.

During the regulated break most effective active, ie activity does not coincide with the main workload. The most typical kind of active rest is industrial gymnastics. The beneficial effect of giving a visit during breaks rooms psychophysiological unloading.

When you work in a standing position it is advisable to replace the gym foot massage; working sitting - include exercises for major muscles of the trunk and lower extremities. Application of special events at the organization of active recreation during breaks regulated (use of simulators, massage, gymnastics) reduces fatigue workers. Must be active and stay after hours.

For knowledge workers associated with psycho-emotional stress, leisure should include not only physical exercise, but exercise love. Sedentary occupations workers during rest must engage in physical exercise to eliminate physical inactivity.

To create a supportive work environment matters and technical aesthetics. This is primarily a rational color and lighting decoration, appropriate design of production facilities and equipment.

For example, one of the companies in Germany rational painting interiors of shops and easel park helped to increase productivity by 25% and reduced the loss of working time by 32%. Functional music also creates a positive emotional background and increases efficiency.

Another problem is the proper organization of labor jobs plan, individual sections of shops and plants in general. Scientifically-based organization of the workplace or jobs in the processing chain allows more rationally allocate nervous and physical energy and promotes the development of lighter dynamic stereotype, and reduces the harmful effects of the chemical and physical environment factors. So, work related operations using extremely toxic substances, accompanied by

high levels of noise, vibration intensity, it is advisable to make a separate isolated room. Noisy workshop in manufacturing should have sufficient sanitary protection zone with nice landscaping, and "harmful" Business should be taken outside the city limits, etc.

Technological measures

To reduce the intensity of physical activity, facilitate the work and reduce the toxic action and physical environment factors used mechanization of labor-intensive work, automated processes. Exception manual operations to minimize costs of mechanical energy.

Eliminating workers from heavy physical strain and repetitive manual work, automation at the same time requires a constant monitoring of physiological functions. Inadequate controls may lead not to the relief work, and to the opposite result. Continuous monitoring of the operation of machines, the need for rapid perception and processing of the vast flow of information, the urgent decision-making and appropriate action contribute to the development of the production of fatigue due to the large voltage attention and swift action.

Additional measures rationalization of labor at each site was determined by automated production detailed study of production and physiological indicators working. Introduction of automated and semi-automated processes to the human physiological capabilities provides significant relief of labor and more favorable working environment.

Sanitary measures

Prevention of adverse effects of harmful factors contributes system sanitary preventive measures.

Industrial ventilation is essential measure for a number of industries and some manufacturing processes and often plays a major role in combating the adverse factors working environment.

Ventilation can be natural and artificial, at the place of action - local and general, on purpose - supply and exhaust.

Natural ventilation. The basis of natural ventilation is the temperature difference and air pressure inside and outside the shop. Air hot shops at a higher temperature and lower relative density. Warm air rushes up. On the natural movement of air in the shop affects mobility outside air (wind pressure). By penetrating through leaks in the building, windows and doorways air changes in the room from 1 to 1.5 times per hour. Naturally, such a ventilation rate in production facilities is insufficient.

In hot (forging and other) workshops in order to enhance extraction of hot air used controlled natural ventilation - aeration (Fig. 11.6). It provides multiple air exchange in large industrial premises. Hot shop often located in separate buildings, a minimum height of 5-10 m walls arrange windows in two rows at different levels. Windows open and close automatically. During the summer, the lower row of windows open in the winter - only the top row. This avoids overcooling of air near the jobs.

During warmer months, the air flow through the bottom row of "summer openings." Winter open clerestory downwind summer - the windward side, and with no wind - on both sides. Outside air enters directly into the working zone, and the heated air is discharged through holes in the highest part of the building. To remove the heated and air pollution in aerated buildings provides device lights in the roof or the top of the walls, as well as the exhaust nozzles on mines with exhaust ducts.

Aeration is a powerful means of reducing the temperature. Using aeration can be done very large volumes of air exchange, which when mechanical ventilation is virtually unreachable.

Mechanical ventilation. Design and operation of ventilation are costly. Mechanical ventilation allows be treated supply air (humidification, heating, removal of mechanical impurities, etc.). Mechanical ventilation can be supply, exhaust and supply and exhaust.

Appointment of forced mechanical ventilation - air supply to the industrial premises. Thus, the air can be distributed throughout the room shop (total supply

air). Ventilation Mechanical ventilation can significantly improve the working conditions (dilution solvent vapors, gases to MPC, the absorption of excess heat, moisture reduction, etc.). Air is fed, typically in the working zone. In some cases, ventilation is used as both air heating system.

Mechanical ventilation in the form of local air flow can significantly improve the working environment on the local site premises or workplace. This is especially important in hot shops. Directional air flow to the workplace creates good conditions for heat transfer due to the temperature difference between the air and the surface of the body and increased air velocity. Air supplied through a special tube, forms an air torch ("air shower"), expanding the distance from the outlet.

Air can be supplied through one or more air ducts located in the center of the production area, and around the perimeter, in the upper, middle or lower zone. For example, if there is dust on the shop floor, it is advisable to feed air into the upper zone, thus eliminating a secondary dusting.

Exhaust mechanical ventilation may be local and general. Local exhaust ventilation is used to combat heat-and water, dust, gases, etc. Depending on the purpose of local exhaust ventilation has certain design features.

Dust control receivers local exhaust ventilation should be as close to the site of its formation, which are arranged around the shrouds grinding and grinding wheels. Effective hoods from which provided air aspiration.

Recycling and air conditioning are mechanical ventilation. Recycling - a kind of mechanical ventilation, when in order to save heat for heating the outside air to it partially mixed exhaust air. Air conditioning - the establishment of production facilities of the air environment with specified parameters; used where high demands for clean air and its other characteristics.

Lighting. Production lighting should provide the best operating conditions and well-being of bodies working to promote and improve productivity.

For a rational, optimal lighting is provided psychological comfort, less pronounced visual and general fatigue, prevents the development of occupational

diseases of the eye (working myopia, spasm of accommodation, etc.). Illumination depends on the size of parts of the reflection coefficient of the working surface and examined on components, the nature of the labor process, etc.

Necessary illumination can be provided by different light sources. Light levels are normalized and suggest the most advantageous brightness ratio of workers and surrounding surfaces, absence of sharp shadows and excessive brightness (glare), stable operation of the lighting installation, eliminating the stroboscopic effect, feeling multiple virtual images of a moving object. Industrial premises and work surfaces highlight the natural and artificial light.

Natural lighting most familiar to the human eye and has a positive psychological impact. It is not always possible to use natural light as it changes dramatically during the day, the season, depending on atmospheric conditions. Natural light through the windows in the external walls (side lighting), glazed skylights in the ceiling (overhead lighting) or creates a combined coverage (both the side and top).

Most types of manufacturing jobs require artificial lighting. If natural light is provided mainly by general lighting, the artificial - general, local and combined.

Total artificial lighting is achieved by uniform placement of lamps of the same power throughout the room, as well as localized placement of fixtures accordingly location work areas. Local lighting is provided by lamps directly over work surfaces. General and local lighting system creates a combined lighting.

Under normal incandescent sufficient and uniform illumination is achieved by proper choice of the number and order of placement of fixtures. Depending on the distribution of the luminous flux lamps are divided into direct, scattered and reflected light, and by design - for opening, closing, water proof, dust-proof, explosion-proof lamps for chemically active medium.

Can be used as conventional incandescent lamps and discharge lamps (fluorescent lamps of various low-pressure range, mercury and high pressure sodium lamps, metal halide lamps, etc.). Incandescent lamps are reliable, durable, and can operate in different weather conditions. HID lamps are more efficient, with

significant light output, good color, do not give the thermal radiation spectrum of radiation close to the natural. However, their disadvantages include strobe effect caused by blinking, especially in old lamps, limiting their use in flammable or explosive areas, as well as at temperatures below 15 and above 25 ° C.

Individual protection means

If you can not eliminate the hazard or production largely weaken their action, in addition to general preventive measures used personal protective equipment related to palliative prevention methods.

PPE include masks, respirators, goggles, antiphons, clothing and footwear. When respiratory protection masks are widely used to reliably prevent acute inhalation poisoning by gases, vapors and aerosols in emergency situations, when cleaning and repair of contaminated equipment, working inside the tanks, wells, manholes, etc. By purpose and basic design masks are divided for filtering and isolating (hose).

Filter masks are used when airborne toxic substances can be caught using filters.

Hose masks isolated from respiratory environmental production atmosphere. Air is supplied to them from the "pure zone". Hose length should not exceed 15-18 meters Isolating masks are used when the oxygen content in the breathing air below 16% or when the concentration of pollutants in the air too high and can not be reduced to an acceptable value by filtration.

By insulating means also include oxygen devices with a margin of compressed air into the cylinders, completely excluding contact respiratory working with the harmful air environment in which they are located.

Industrial gas masks consist of a jacket worn over the head with a rubber facepiece exhalation valve, filter box or a long hose. Box is filled with a gas mask filter sorbents that absorb from the filtered air toxic fumes and gases.

Masks retain the protective properties only when sufficient oxygen for breathing (not less than 18%) and are intended for certain toxic compounds.

If delivery is dangerous toxic substances only through inhalation (eg, mercury vapor), the function of insulating masks can perform special purpose respirators, respirator such as the RPG-67, universal dust and gas respirator RU-60M, etc.

Dust masks consist of front and filter parts. As a filter to clean the air of dust inhaled use cotton, wool, silk, porous cardboard, loose paper, wool, synthetic materials, etc.

Front of respirators are usually equipped with the inhalation and exhalation valves. Effectiveness of respirators, expressed as a percentage, determined by the amount of pollutants in the air before and after passing through the respirator.

In recent years, widely used in industry received a dust mask - dressing SB-1 ("Petal") area of approximately 250 cm2 of special fabric (thin fibrous synthetic material), which is placed between two layers of cheesecloth. With minimal breathing resistance (2-4 mm of water. Tbsp.) And weight about 10 g respirator effectiveness SB-1 is close to 100%. Currently available range of respirators for protection against non-toxic dust: PRB-5, RPP-57, F-62, PRSH-2-59, "Astra-2".

Goggles are designed to protect the bodies of dust, debris, spray toxic substances and molten metal, infrared and ultraviolet rays. Protective goggles should not limit the field of view, providing sufficient clarity of vision, slow misting, a good fit to the face, sufficient strength; Points should be easy.

To protect the eye from mechanical injury can apply mesh goggles or sunglasses with shatterproof glass type "triplex".

To work with the microwave radiation used by radar stations goggles made of brass mesh or metallic glasses.

To dust and points are the chauffeurs and agricultural glasses, as well as emergency points (sealed "glasses-canned") having a solid rubber rim to protect his eyes from the poisonous, caustic dust, as well as gases and vapors.

Special clothing and footwear used to protect workers from the adverse meteorological factors, moisture, dust, acids, alkalis. These personal protective equipment must meet the performance and hygienic requirements.

Depending on the nature of the production process and working conditions distinguish clothing designed for working in hot shops in dusty conditions, etc.

Overalls made of various materials that satisfy hygienic as well as special requirements. The main materials used fabrics of cotton, linen, wool, silk, synthetic fibers (nylon, polyester, chlorine, ortorlon etc.).

To protect against splashes of molten metal used linen, canvas and wool fabrics, from acids and alkalis - rubber and PVC materials; from the effects of cooling mineral oils and organic solvents - special oil resistant fabric, dust - tight cotton moleskin fabric type. For protection from infrared rays when working in hot shops designed clothes of several layers: the outer layer - Linen, medium - of wool fabric (absorbs heat rays) and internal - of soft absorbent cotton fabric. Simultaneously for the local radiation protection use fabric coated with a layer of metal with a large reflection coefficient, tissue from asbestos.

Fabrics for clothing should be breathable, non-hygroscopic, thermal conductivity, provide special protection. Tailoring can significantly correct the properties of the tissue using special design techniques.

Protective headgear as duralumin and plastic helmets and helmets (for miners, builders, etc.), cloth and felt hats (for workers in hot shops) protect the head from mechanical damage, burns, water ingress, etc.

Some manufacturing processes require the use of special materials footwear (shoes for miners working in hot shops, jeopardize vibration, etc.).

To prevent adverse effects of harmful factors also apply protective pastes and ointments. They are divided into hydrophilic and hydrophobic and protect the skin of hands and face from exposure to vapors, gases, dust, corrosive substances, radiant energy. Selecting protective pastes and ointments on the ability of the poison dissolve in fats, water, protective film materials.

Treatment and preventive measures

The main methods of work of doctors in all specialties in industrial enterprises are clinical examination and medical check-ups.

Clinical examination - a method of systematic medical supervision in dispensaries, clinics, health units, children's and women's clinics for the health of certain groups of the healthy population (industrial workers, children up to 3 years, athletes, etc.), or patients with chronic diseases in order to preserve and health promotion and prevention and early detection, early treatment and prevention of exacerbations.

Preliminary medical examinations aim to prevent work-related production harmfulness, people with health problems that may be worsened by the influence of specific industrial hazards. For example, the company where workers affected by silica dust, it is impossible to recruit patients pneumosclerosis, chronic pneumonia, bronchitis, tuberculosis, allergic diseases.

The second purpose of the preliminary medical examinations is to detect diseases, preventing the full implementation of specific work without ill health (eg color blindness when applying for a job as a driver, neuropsychiatric diseases when dealing with weapons, parkinsonism when working high accuracy, etc.).

Preliminary medical examinations largely contribute to the prevention of occupational diseases.

Periodic medical examinations are conducted mainly working to detect early changes in the body caused by exposure to harmful factors.

Periodic medical examinations aimed at identifying early signs of not only professional poisoning or disease, but a disease that is not etiologically related to the profession, but becomes dangerous due to exposure to certain harmful factors. With periodic medical examinations reveal general nonspecific morbidity appoint individual treatment and preventive measures. The results of such examinations are the basis of hygienic assessment and improvement of working conditions, the development of measures to reduce overall morbidity.

4.2 Fire Safety

Fires cause huge material damage and in some cases accompanied by death. Therefore, fire protection is an essential duty of every member of society and is conducted on a national scale.

Fire protection is aimed at finding the most efficient, cost-effective and technically sound ways and means of fire prevention and response with minimal damage in the most rational use of forces and means of extinguishing.

Fire safety - a state of the object, which prevents the possibility of fire, and if it occurs used necessary measures to eliminate the negative impact of fire hazards on people, buildings and property

Fire safety can be ensured fire prevention measures and active fire protection. Fire prevention includes a set of measures aimed at the prevention of fire or decrease its effects. Active fire protection - measures to ensure the successful fight fires or explosive situation.

Fire - it is a special burning hearth, which is not controlled and can cause mass destruction and loss of life, as well as to the application of environmental, financial and other harm.

Combustion - a chemical reaction of oxidation, accompanied by release of heat and light. For the occurrence of combustion requires three factors: the flammable substance to an oxidizing agent and a source of ignition. Oxidizing agents may be oxygen, chlorine, fluorine, bromine, iodine, nitrogen monoxide and etc. Moreover, of combustible material necessary to have heated to a certain temperature and was in a certain proportion with the oxidant source and the deck has a certain energy.

The highest burning rate observed in pure oxygen. With a decrease in the oxygen content in the air burning stops. Burning at a sufficient concentration and nadmernoy oxidizer is called complete, while its lack - incomplete.

There are three main types of self-acceleration of chemical reactions during combustion: heat, chain and chain-thermal. The heat mechanism is associated with the exothermicity of the oxidation process and the chemical reaction rate increases

with increasing temperature. Chain reaction is due to the acceleration catalyzed transformations that carry intermediates transformations. Real combustion processes are carried out, as a rule, the combined (chain-thermal) mechanism.

The process of combustion is divided into several types.

Flash - rapid combustion of the combustible mixture is not accompanied by the formation of compressed gas.

Fire - burning appearance under the influence of an ignition source.

Inflammation - fire, accompanied by the appearance of the flame.

Spontaneous Combustion - the phenomenon of a sharp increase in the velocity of exothermic reactions, leading to the emergence of burning material in the absence of an ignition source. There are several types of spontaneous combustion:

- Chemical-exposure of combustibles oxygen, air, water or substances interact;
- Microbiological - occurs at defined temperature and humidity in vegetable foods (grains autoignition);
- Thermal effects due to long-minor heat sources (eg, at a temperature of 100 C Tirso, fiberboard and others prone to spontaneous combustion).

Autoignition - spontaneous combustion, accompanied by the appearance of the flame.

Explosion - extremely fast (explosive) conversion, accompanied by the release of energy to produce compressed gases.

The main indicators are fire hazards and ignition temperature of flammable limit.

Auto-ignition temperature characterizes the minimum temperature of the material in which there is a sharp increase in the rate of exothermic reactions, ending with the appearance of the flame burning.

Flashpoint - the lowest (under special tests), the temperature of combustible material, in which the surface of the formed vapors and gases that can flare up in the air from the source of ignition, but the rate of their formation is still insufficient for later burning.

According to this characteristic of flammable liquids are divided into two classes:

1) liquid t aux < 61 0 C (gasoline, ethanol, acetone, nitroemali etc.) - flammable liquids (flammable liquids);

2) liquid t aux > 61 0 C (oil, fuel oil, formalin, etc.) - flammable liquids (GJ).

Flashpoint - substance the combustion temperature at which it releases the gases and fumes at a rate such that, after ignition of the ignition source arises from the steady burning.

Inflammation limits - the temperature at which the saturated vapor in the form of matter oxidizing medium concentration equal to the lower and upper flammable limit fluids.

Called flammable substances capable of self-burn after removal of the source of ignition.

By flammability substances are divided into: flammable (combustible), nonflammable (nonflammable) and incombustible (fireproof).

To include such combustible substances which, when ignited, extraneous sources continue to burn and after its removal.

By slow-are those substances which are not able to spread the flames and burn only in the impact of an ignition source.

Combustible substances are not flammable even when exposed to sufficiently powerful ignition sources (pulses).

Flammable substances may be in three states: solid, liquid and gaseous. Most combustible substances regardless of the state of aggregation when heated forms a gaseous products which when mixed with air containing certain quantity of axes, form a combustible environment. Hot medium can be formed by spraying a finely divided solids and liquids.

Combustible gas and combustible dust mixture produced at all temperatures, while solids and liquids to form a combustible mixture only at certain temperatures.

In a production environment can take place formation of mixtures of flammable gases or vapors in any proportions. However, these explosive mixtures may be only when the concentration of combustible gas or vapor is ignited between the boundaries of concentrations.

The minimum concentration of combustible gases and vapors in the air, where they can be ignited and the flames spread, called the lower flammable limit .

The maximum concentration of flammable gases and vapors, which still allows the spread of flames, called the upper flammable limit.

These limits depend on the temperature of the gases and vapors: the temperature increase at 100 0 C the lower flammable limit reduced by 8 - 10% of the upper - is increased by 12 - 15%.

Fire hazard of the substance is greater than below the lower and above the upper explosive limit and the lower the ignition temperature.

Combustible dust, and some non-flammable material (eg aluminum, zinc) may be mixed with air to form a flammable concentration.

The greatest danger is to blow the dust suspended in the air. However, the dust settled on the designs is a danger not only from the standpoint of fire, but also a secondary explosion caused as a result of primary vzvihrivaniya dust explosion.

The minimum concentration of dust in the air, at which there is a fire it is called the lower limit of dust ignition .

As achieving very high concentrations of dust in suspension is practically impossible, the term "upper flammable limit" does not apply to dust.

Ignition of the liquid can occur only if the surface of it has a vapor-air mixture at a certain quantitative ratio corresponding to a lower limit ignition temperature.

Chapter three summary

1. The main directions in the field of hygiene mental and physical labor.

2. Defined and the basic forms of physical and mental health work: organizational, technological, sanitary and prophylactic.

3. Defined fire protection: fire prevention and active fire protection.

4. Considered combustion processes and accelerate these types of processes: heat, chain and chain-thermal.

5. The main indicators of fire danger: self-ignition temperature and concentration limits of ignition.

Conclusion

Based on the work performed and the above presented material the following conclusion can be made.

The aim of this work is to collect and systematize information analytical portal software.uz to provide quantitative data forming rating developers and software products.

Within this work the following results were obtained:

- The analysis of technology and the development of portal solutions chosen platform ASP. NET of - for high performance, availability funds integration and capabilities separation of the forward logic and interface
- Architecture-based web portal software.uz defined connection subsystem "Analytics" with subsystems portal. Identified function subsystem "Analytics"
- The architecture of the subsystem and its data base built on DBMS MS SQL Server
- Implemented on language C # business - logic subsystem. Successfully performed testing and introduction subsystem in Catalog. In her time subsystem is current mode online analyzes data about software development and manufacturers by. Implementation results are presented in the form of screenshots of graphical representations of analytical reports.
- The problems of health mental and physical labor and fire safety.

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APPENDIX

DataProvider class listing

```
public class DataProvider
{
    #region Fields
    private string _connectionString;
    private string _tableName = null;
    private SqlConnection _sqlConnection;
    private SqlCommand _sqlCommand;
    private string _sqlRequest;
    private SqlDataReader _sqlDataReader;
    private int _idOfJustInsertedRow;
     #endregion

    #region Properties
    protected int IdOfJustInsertedRow
    {
        get { return this._idOfJustInsertedRow; }

    }
    protected string TableName
    {
        get { return _tableName; }
        set { _tableName = value; }
    }
    protected SqlDataReader DataReader
    {
        get { return _sqlDataReader; }
    }
     #endregion



   private bool TestConnection(string connectionString)
    {
        try
        {
            using (var connection = new SqlConnection(connectionString))
            {
                connection.Open();
                return true;
            }
        }
        catch
        {
            return false;
        }
   }

    protected string SqlRequestBuilder(SqlRequestType sqlRequestType,
        List<string> fields = null,
        List<object> values = null,
        string nameOrederingBy = null,
        List<FilterValue> filterVals = null,
        string delimiter="and")
    {
        string sqlRequest = "";
        switch (sqlRequestType)
        {

            case SqlRequestType.Max:
```

```
                    sqlRequest = string.Format("Select max({0}) as maxValueOf{1}Column
from {2}", values[values.Count - 1], values[values.Count - 1], _tableName);
                    break;

                case SqlRequestType.Create:
                    sqlRequest = string.Format("Insert into {0}(", _tableName);
                    for (int counter = 0; counter < values.Count; counter++)
                    {
                        sqlRequest += " " + fields[counter] + ",";
                    }
                    sqlRequest = sqlRequest.Remove(sqlRequest.Length - 1, 1);
                    sqlRequest += ") values( ";
                    for (int counter = 0; counter < values.Count; counter++)
                    {
                        sqlRequest += " @" + fields[counter] + ",";
                    }
                    sqlRequest = sqlRequest.Remove(sqlRequest.Length - 1, 1);
                    sqlRequest += ");";
                    sqlRequest += " select cast(scope_identity() as int)";
                    break;

                case SqlRequestType.Update:
                    sqlRequest = string.Format("Update {0} set", _tableName);

                    for (int counter = 0; counter < fields.Count - 1; counter++)
                    {
                        sqlRequest += string.Format(" {0}=@{1}", fields[counter],
fields[counter]) + ",";
                    }
                    sqlRequest = sqlRequest.Remove(sqlRequest.Length - 1, 1);
                    sqlRequest += " where ID=@ID";
                    break;

                case SqlRequestType.Delete:
                    sqlRequest = string.Format("Delete from {0} where ", _tableName);
                    sqlRequest += string.Format("{0}=@{1}", fields[fields.Count - 1],
fields[fields.Count - 1]);
                    break;

                case SqlRequestType.Read:
                    sqlRequest = "Select ";
                    if (fields == null)
                        sqlRequest += string.Format(" * from {0}", this._tableName);
                    else
                    {
                        for (int counter = 0; counter < fields.Count; counter++)
                        {
                            sqlRequest += string.Format(" {0},", fields[counter]);
                        }
                        sqlRequest = sqlRequest.Remove(sqlRequest.Length - 1, 1);
                        sqlRequest += string.Format(" from {0}", _tableName);
                    }
                    if (values != null)
                    {
                        sqlRequest += string.Format(" where {0}=@{1}",
fields[fields.Count - 1], fields[fields.Count - 1]);
                    }
                    if (nameOrederingBy != null)
                    {
                        sqlRequest += string.Format(" ORDER BY {0}", nameOrederingBy);
                    }
                    break;
                case SqlRequestType.Search:
                    if (fields == null)
```

```
                        sqlRequest = string.Format("Select * from {0} where {1}",
_tableName, SearchParamsBuilder(filterVals, delimiter));
                    else
                        sqlRequest = string.Format("Select {0} from {1} where {2}",
fields[0], _tableName, (SearchParamsBuilder(filterVals, delimiter)));
                    break;

            }
            return sqlRequest;
        }


        protected void SqlRequestHandler(SqlRequestType sqlRequestType,
            List<string> fields = null,
            List<object> values = null,
            string nameOrederingBy = null,
            List<FilterValue> filterVals = null)
        {
            if (!flag)
                this._sqlRequest = this.SqlRequestBuilder(sqlRequestType, fields, values,
nameOrederingBy);



            switch (sqlRequestType)
            {
                case SqlRequestType.Max:
                    this._sqlCommand.CommandText = _sqlRequest;
                    this._sqlCommand.Parameters.Clear();
                    break;

                case SqlRequestType.Create:
                    this._sqlCommand.CommandText = _sqlRequest;
                    this._sqlCommand.Parameters.Clear();
                    for (int counter = 0; counter < values.Count; counter++)
                    {
                        if (values[counter] != null)
                            this._sqlCommand.Parameters.Add(new
SqlParameter(string.Format("@{0}", fields[counter]), values[counter]));
                        else
                            this._sqlCommand.Parameters.Add(new
SqlParameter(string.Format("@{0}", fields[counter]), DBNull.Value));

                    }
                    break;
                case SqlRequestType.Update:
                    this._sqlCommand.CommandText = _sqlRequest;
                    this._sqlCommand.Parameters.Clear();
                    for (int counter = 0; counter < fields.Count; counter++)
                    {
                        if (values[counter] != null)
                            this._sqlCommand.Parameters.Add(new
SqlParameter(string.Format("@{0}", fields[counter]), values[counter]));
                        else
                            this._sqlCommand.Parameters.Add(new
SqlParameter(string.Format("@{0}", fields[counter]), DBNull.Value));
                    }
                    break;

                case SqlRequestType.Delete:
                    this._sqlCommand.CommandText = _sqlRequest;
                    this._sqlCommand.Parameters.Clear();
```

```
                    this._sqlCommand.Parameters.Add(new
SqlParameter(string.Format("@{0}", fields[fields.Count - 1]), values[values.Count - 1]));
                    break;

                case SqlRequestType.Read:
                    if (values != null)
                    {
                        this._sqlCommand.CommandText = _sqlRequest;
                        this._sqlCommand.Parameters.Clear();
                        this._sqlCommand.Parameters.Add(new
SqlParameter(string.Format("@{0}", fields[fields.Count - 1]), values[values.Count - 1]));
                    }
                    else
                        this._sqlCommand.CommandText = this._sqlRequest;

                    break;
                case SqlRequestType.Search:
                    this._sqlCommand.CommandText = this._sqlRequest;
                    this._sqlCommand.Parameters.Clear();
                    break;


            }

            try
            {
                OpenConnection();
                switch (sqlRequestType)
                {
                    case SqlRequestType.Read:
                    case SqlRequestType.Max:
                    case SqlRequestType.Search:
                        this._sqlDataReader = _sqlCommand.ExecuteReader();
                        break;

                    case SqlRequestType.Create:
                        this._idOfJustInsertedRow =
(int)this._sqlCommand.ExecuteScalar();
                        break;
                    case SqlRequestType.Update:
                    case SqlRequestType.Delete:
                        this._sqlCommand.ExecuteNonQuery();
                        break;
                }
            }
            catch (SqlException e)
            {
                throw new ApplicationException("Error occured while handling sql request"
                                               + "\nException message: "
                                               + e.Message);
            }

            finally
            {
            }
        }

        public DataProvider()
        {
            this._connectionString =
ConfigurationManager.ConnectionStrings["FANConnectionString2"].ConnectionString;

            this._sqlConnection = new SqlConnection(_connectionString);
```

```
            this._sqlCommand = new SqlCommand();
            this._sqlCommand.Connection = SingletonConnection.Instance.Connection;
        }

        protected void OpenConnection()
        {
            if (SingletonConnection.Instance.Connection.State == ConnectionState.Closed)
            {
                SingletonConnection.Instance.Connection.Open();
            }
        }

        protected void CloseConnection()
        {
            if (SingletonConnection.Instance.Connection.State == ConnectionState.Open)
            {
                SingletonConnection.Instance.Connection.Close();
            }
        }
        #endregion

        protected enum SqlRequestType
        {
            Create,
            Read,
            Update,
            Delete,
        }
    }
```