goDB, etc. Creation of a role assumes a description of process of installation and configuration of concrete element, definition of a set of the possible parameters having impact on process, determination of dependences on other roles. The format of the description of a role is strictly regulated, the structure of a file system determined by the agreement.

For roles distribution there is a special repository with the name Ansible Galaxy [7]. Moderation of the roles published in this repository leaves much to be desired, there is a system of the user responses, but also it doesn't give quality assurance. Besides, Ansible does not have any cross-distributive features which creates additional difficulties in search of an existent role for application in its own environment. By trial and error method, we came to the tactics of our own realization of roles with the configurability, which is minimum demanded for reuse, and to their distribution through an internal corporate repository.

After usage of approach of grouping the configurations in roles, the file of the scenario turns into the simple list of roles and servers to which they have to be applied. Thus concrete servers for each environment are set in theirnown inventory-file. It is easy to expand and support a configuration of such format, it becomes similar to a good object-oriented code.

Nowadays, almost in all projects of our company the system of virtualization of an environment of the developer is used with the tools and approaches described above. As a result, wiki-instructions for new developers have practically disappeared, and the average time of the beginning of work on the new project has been considerably reduced. The degree of a working process compliance of methodology of DevOps includes a set of parameters and almost doesn't give in to an objective assessment, but a positive dynamics is obvious, so the correct reference point for progress is chosen.

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THE GRAPH VISUALIZATION PROBLEMS OF ARTIFICIAL INTELLIGENCE

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The article deals with the criteria for quality visualization of graphs for various subject areas, as well as algorithms for graph visualization in accordance with predetermined criteria. Scroll to the following criteria: the number of intersections of the ribs, the unification of edge lengths, the area of occupancy, number of folds, symmetry.

Currently, research in these areas traditionally belongs to mathematics taking a more prominent place. The problem of choosing the optimal solution for various kinds of applications, is one of the most pressing technical and economic problems [1].

Development of the theory of graphs in the main obligation to the large number of various applications, such as scheduling the movement of vehicles, placing items ambulance or telephone stations, optimal selection of the intensities of work, the problem of the distribution of work, placement of dispatch centres of urban transport networks as well as network design, television broadcasting and other [2,3]. Therefore, the graphs have been used in virtually every branch of science: physics, biology, chemistry, mathematics, history, linguistics, social sciences, technology, etc. The most popular graph-theoretic model is used in the study of communication net-

works, informatics systems, chemical and genetic structures, electrical circuits and other systems of the network structure. For example, the linking structure website may be represented as a directed graph wherein vertices represent Web pages and directed edges represent links from one page to another [2].

Nowadays visualization of information is the key to many problems and applications of artificial intelligence. One of the ways to visualize complex data is the use of graphs. Graphs help to present information in a concise and easy to understand form, so now there is an intensive development of algorithms and visualization systems. Quality criteria used in order to increase the visibility of the image plays an important role in the visualization of the graph [4]. The choice of criteria depends on the specific task.

There exist the need to minimize the number of crossings, for example, in design of railways and other ways, as well as integrated circuits. Unfortunately, many graphs are not planar, so it is impossible to portray without intersections. However, for a flat layout of a graph and a passing test, if it is planar, it is convenient to use the gamma algorithm [5]. To visualize the acyclic directed graphs and trees, hierarchical approach and algorithm of radial layout can be used. However, not all planar, this algorithm will produce an image with a minimum of intersections. Moreover, the image may appear in such graphs shortcomings as the imposition of the ribs on the top and an increase in the area occupied by the Count.

Image of small size is required when saving screen space is very important. For example, for a small number of graphs with peaks and comparable with it the number of edges, the most convenient representation may be rectilinear as shown in Figure 1. The area of placement can be determined in several ways. For example, you can define it through the area of the minimum convex polygon covering the pattern or pattern covering the area of the smallest rectangle with horizontal and vertical sides.

For certain types of graphs exist algorithms which can minimize the space occupied by the image. Generally, the smaller the area occupied by the graph, the smaller the total length of its edges. The length of the ribs can also be determined in various ways, for example using the Euclidean metric. The usage of hierarchical method is good to minimize the total length of the ribs. If we consider an arbitrary graph to minimize the total length of the ribs, algorithms based on physical analogies can be used: on the one hand, the tensile forces acting between the vertices connected by an edge will significantly reduce its length and on the other hand, the repulsive forces would take away too close located to the top. Thus, a good layout is not agglomerated vertices and edges, and the overall length is minimal.

Minimizing the number of folds is important, for example, to build a family tree, working with different classifications and taxonomies.

If the criterion of minimizing the intersection edges in the graph is not a principal in a particular task, to achieve the unification of the ribs can be successfully applied methods of use of physical analogy: if we consider the graph as a combination of electronic forces and spring, it is possible to find such length value which for all edges will be approximately equal.

Influence of symmetry on the understanding of the image of the graph has not yet found experimental confirmation. But never more than a show, if possible, the existing symmetry in it. So, for the tree by using a hierarchical approach can be attractive enough to get the picture, symmetric with respect to the axis Ox and Oy. Radial image of these graphs also gives good results, if required to meet the criterion of symmetry. Experiments have shown that in many cases, algorithms based on physical analogies build symmetrical image of the graph [5]. An example of such a graph is shown in Figure 2.

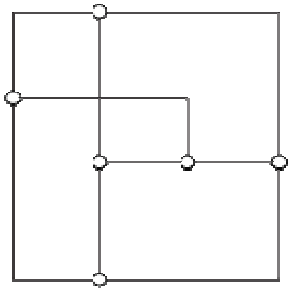

Fig. 1. Orthogonal Image Count

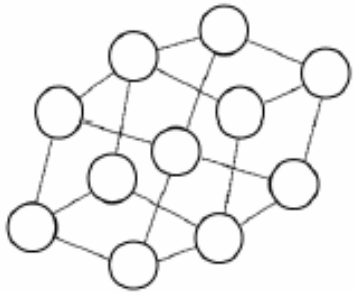

Fig. 2. The graph obtained using the «spring» method

The most flexible algorithms to build the image of simple undirected graphs, are a group of security algorithms, also known as spring. These methods are very popular for the following reasons: they are very intuitive, and are suitable for imaging graphs of arbitrary form, they are easy to understand and program for graphs with peaks of about 150 they give satisfactory results. These images look aesthetically reflect symmetry data and, if possible, contain no intersections of the ribs. The basis of any power of the algorithm makes two components:

1. The model describes a system of physical objects (corresponding to the vertices and edges of the graph).
2. The algorithm (approximately) calculates a state of equilibrium for this system.

Description of the model is based on ideas about what can be considered a good image in each case. With the model associated objective function describing a concrete concept of good images, and the algorithm used to optimize the objective function.

The same method of simulated annealing and genetic algorithms are universal approaches to optimize any of the criteria of quality, and are used for all classes of graphs. Among their advantages also include ease of implementation and clarity for the user.

Thus, the following conclusions can be made. Firstly, the algorithms to automatically place graphs give good results only in certain classes of them. Secondly, the image produced by the graph strongly depends on the particular application. We must fulfill certain quality criteria that apply image. Not all graph visualization algorithms can ensure the implementation of the criteria. Therefore, an important finding of such approaches that would allow not only to meet certain quality criteria, but also the opportunity to work with arbitrary graphs.

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APPROACHES TO THE CONSTRUCTION OF DISTRIBUTED WEB SYSTEMS

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This paper dwells on some of the key issues that should be considered in the design of large websites, as well as some of the basic components used to achieve these goals. The main attention is paid to the analysis of web-based systems.

Open source software has become a fundamental building block for some of the biggest websites. Building and operating a scalable web site at a primitive level is just connecting users with remote resources via the Internet — the part that makes it scalable is that the resources, or access to those resources, are distributed across multiple servers. The time to plan ahead when building a web service can help in the long run. Below are some of the key principles that influence the design of large-scale web systems: performance, cost, reliability, availability, scalability and manageability [1].

The speed of a website affects its usage and user satisfaction, as well as search engine rankings. As a result, a system that is optimized for fast responses is created. A system needs to be reliable, so that a request for data will consistently return the same data. In case if the data changes or is updated, the same request should return the new data. Users should be sure that no data will be lost. Designing systems to be available to failure is a fundamental and a technology requirement. High availability in distributed systems requires careful consideration of redundancy for key components, rapid recovery in case of partial system failures. For some of the larger online retail sites, being unavailable for even minutes can result in thousands or millions of dollars in lost revenue. The effort required to increase capacity to handle greater amounts of load, commonly referred to as the scalability of the system, is very important. Scalability can refer to many different parameters of the system: how easy it is to add more storage capacity, or even how many transactions can be processed. Designing a system that is easy to operate is another important consideration. Things to consider for manageability are the ease of diagnosing and understanding problems when they occur, the ease of making updates or modifications [2].

Each of these principles provides the basis for decisions in designing a distributed web architecture. However, they can also be at odds with one another, so that achieving one objective comes at the cost of another.