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Development of the Twikle CRM system

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Abstract. This article presents an analysis of trends in the development of the information technology market. The development of the content management systems (CMS) is traced from its origin. The tools designed to create such systems are considered. First of all, these are programming languages and technology companies working in this field. It is no secret that the development of the Internet is primarily associated with the development of the sources of information, that is, with the websites. Currently, there constantly appear much easier ways of website creation and the procedure of information uploading is getting significantly simplified year by year. A brief analysis of programming languages for creating websites is given. The possibilities and tools for creating CMS augmented with a number of frameworks to speed up the development exponentially and having other advantages as well are dwelt upon. The functional capabilities of CRM-systems both in general and for the development of the whole business, especially the online segment are presented. The article substantiates the necessity for the implementation of CRM system and describes the main features of the system.

1. Introduction

The development of the Internet is primarily associated with the development of the sources of information, that is, with the websites. Currently, there constantly appear much easier ways of website creation and the procedure of information uploading is getting significantly simplified year by year. At an early stage of Internet development, the only way to create a website was to learn programming languages and use these skills when working with the website. Thus, it is necessary to take into account the fact that such languages were critically few, and to be more precise – there was only one.

Gradually, thanks to HTML, CSS and PHP, site management systems were created to make the practical application of web technologies available to ordinary users, as well as to reduce the time taken by professionals to develop Internet projects, thus, the concept of Content Management System (CMS) [1] has been developed. The first systems of this type were considered to be a failure and seemed useless on the market. In Russia, the most popular systems were “Ucoz” and “Yandex people”. At that time in Russia they had no competitors. But CMS data systems like “Ucoz” and “Yandex people” are cloud-based CMS systems, which are necessary to be visited and managed directly. Another type of CMS designed for more professional users is local CMS. They can be downloaded and installed on any server. They are both paid and free. In Russia, these engines are involved in a really tough competition. But unfortunately, domestic CMS have not been properly developed. According to various ratings, the most popular content management systems (CMS) are WordPress, Joomla! And Drupal. TYPO3, Bitrix, HostCMS, NetCat, UMI.CMS are also often mentioned in these popularity ratings [2]. Undoubtedly, 1C-Bitrix holds the first place among the paid CMS in Russia.



Thus, this paper makes assessment of the prospects for CMS products to enter the Russian market. As it was previously noted, in our market there is an opportunity to compete with foreign companies with the help of domestic developments.

2. Methods and Equipment

Currently, there are many classifications of CMS-systems on the market, which can be divided according to themes or technologies.

We can highlight the most popular themes of site management systems:

- general-purpose CMS;
- galleries;
- social networks;
- forums;
- online stores;
- business card sites without databases.

General-purpose CMS is a kind of multifunctional system that allows you to create projects of any kind and subject, but knowledge of programming languages is important here. The examples of such engines are MODX, JOOMLA, WORDPRESS, etc [3].

The demands of Internet users are growing, technologies go far ahead, all the above stated suggests the necessity for further development of this segment. The development of site management systems can be analyzed by referring to their roots. The roots in this case are the tools themselves designed to create such systems. First of all, these are programming languages and technology companies working in this field.

When the situation on the market of Internet technologies was finally determined and the market acquired a certain structure, three main technologies remained at the forefront. Despite the fact that the Perl scripting language has preserved its popularity among its staunch supporters, the simplicity of the PHP and the acceptability of using embedded references to the MySQL database program have provided this language with more than double superiority in the number of users [4].

It is necessary to note further what changes have occurred in the field of Internet technologies. Today we have ten times more tools for creating information systems. Unlike the previous period when the programmer's arsenal used to include only HTML, CSS and PHP, today it is a list of such solutions. The site management system can be written in Javascript using Node js or in Python using Indigo. It is possible to give a lot of such examples. Besides, the advent of a number of frameworks has allowed to speed up website design. For example, thanks to the popular Bootstrap css framework, it is much easier to work with styles and colors [5]. Companies engaged in the development of Internet technologies, claim that this segment will continue growing. For instance, the usual image format has been replaced with the SVG technology, which is much better than jpeg format. Improving the image in SVG involves weight reduction, alongside with quality enhancement.

The Internet growth effects the development of the entire business associated with it. Moreover, site management systems are an integral part of most companies' businesses, especially in the online segment [5].

3. Development of the Twikle CRM system

As previously noted, this industry is growing, and the dynamics of its growth is very fast. Competition is not getting weaker, but the leaders of this market are in stagnation. This market is waiting for a breakthrough and an even easier interface. The Twikle system, first of all, is a local CMS aimed at ordinary users. The problem with all local CMS is the complexity of the interface, which forces their users to study the documentation to organize the work. Twinkle solves this problem.

The Twikle site management system makes it possible to create sites of any level with minimal knowledge of programming languages.

The main advantage is the possibility of easy interaction with the system, i.e. the use of this system makes it faster and easier to create a working version of the site. A lot of efforts were put into this result.

But the strongest side of the system is that it is developed specially for ordinary users, and not for gurus of the Internet. What the system is lacking to have an advantage over everyone is the final functionality – it is artificial intelligence that allows users to create sites even easier.

3.1. The development of the database structure

When developing the Twikl website management system, all the latest tools in this field were applied. PHP is the main programming language, as in all popular systems. The database system was developed in MySQL on the basis of PHPMyAdmin software. The structure of the developed database and their relationships are shown in figure 1.

☐ twikl_users	Обзор Структура Поиск Вставить Очистить Удалить	~0	InnoDB	utf8_general_ci	16 КБ	-
☐ twikl_modules	Обзор Структура Поиск Вставить Очистить Удалить	~5	InnoDB	utf8_general_ci	16 КБ	-
☐ twikl_section	Обзор Структура Поиск Вставить Очистить Удалить	~2	InnoDB	utf8_general_ci	16 КБ	-
☐ twikl_value	Обзор Структура Поиск Вставить Очистить Удалить	~19	InnoDB	utf8_general_ci	16 КБ	-
☐ twikl_templates	Обзор Структура Поиск Вставить Очистить Удалить	~5	InnoDB	utf8_general_ci	16 КБ	-
☐ twikl_upload	Обзор Структура Поиск Вставить Очистить Удалить	~19	InnoDB	utf8_general_ci	16 КБ	-
☐ twikl_types	Обзор Структура Поиск Вставить Очистить Удалить	~178	InnoDB	utf8_unicode_ci	16 КБ	-
☐ twikl_components	Обзор Структура Поиск Вставить Очистить Удалить	~29	InnoDB	utf8_unicode_ci	48 КБ	-
☐ twikl_setting	Обзор Структура Поиск Вставить Очистить Удалить	~27	InnoDB	utf8_unicode_ci	32 КБ	-
☐ twikl_property	Обзор Структура Поиск Вставить Очистить Удалить	~0	InnoDB	utf8_unicode_ci	16 КБ	-
☐ twikl_logger	Обзор Структура Поиск Вставить Очистить Удалить	~68,387	InnoDB	utf8_general_ci	7 МБ	-
☐ twikl_pay	Обзор Структура Поиск Вставить Очистить Удалить	~0	InnoDB	utf8_general_ci	32 КБ	-
☐ twikl_settemp	Обзор Структура Поиск Вставить Очистить Удалить	~0	InnoDB	utf8_general_ci	16 КБ	-
☐ twikl_category	Обзор Структура Поиск Вставить Очистить Удалить	~38	InnoDB	utf8_general_ci	32 КБ	-
☐ twikl_valresult	Обзор Структура Поиск Вставить Очистить Удалить	~74	InnoDB	utf8_general_ci	32 КБ	-

Figure 1. Database in PHPMyADMIN.

Description of the main database tables:

- Twikl_users – the table of the user's data storage, such as – email, password, username, first name, last name, registration type, link to the account and other user information.
- Twikl_modules – the table for storing data about modules, their names and links to locations in the file system of the site.
- Twikl_section – the table for storing sections and links to them, name, url and settings.
- Twikl_value – the table contains lists of selected data type results, that is, any lists and categories are stored here.
- Twikl_templates – the table of templates data forms to add and edit.
- Twikl_upload – the table stores the user's downloads to the website, the link to the address of the file and its type.
- Twikl_types – the table with the data types of html templates.
- Twikl_components – the table of site components. Recording is enabled/disabled depending on the selected site type.
- Twikl_setting – basic site settings. Theme, headlines and design.
- Twikl_property – the table of templates and margins properties.
- Twikl_logger – the table of critical error records. This table is necessary for developers and ordinary users.
- Twikl_pay – payment data storage table. Twikl integrates with the Yandex payment system - Yandex. Kassa. This table stores the keys that it provides.
- Twikl_settemp – template settings: logo, color, etc.
- Twikl_category – settings for the website menu categories.
- Twikl_valresult – the table of records.

3.2. System requirements

The developed Twinkle website management system is installed directly on the server. As a server, you can use any operating system with the Apache server installed. Since the code itself is directly written in a file with php extension, to start the installation, it is enough to download an archive with files to the desired directory, that is, to the root of the domain.

To run the Twikle system, minimum system requirements must be met:

PHP 5.3.10+ (Magic Quotes GPC off), MySQL 5.1+ (InnoDB support), Apache 2.x+ (with mod_mysql, mod_xml, and mod_zlib modules).

4. Program description

The program is installed by any browser by clicking on a direct link, the path to which directly leads to the installation file. Next, the installation module opens - interface with settings. It all starts with installation, data input. The data of the connected database and configuration data, such as login and password to enter the admin panel, shown in figure 2, are uploaded.

After uploading the data, a new window with the site theme selection interface opens. Note that is not provided with any of the existing CMS. In this window, the user selects the general theme of the site and then a specific theme. This means that on the second step of site installation it is possible to specify what type of site it belongs to:

- blog;
- news site;
- online store;
- landing page.

The system currently works only by a given algorithm, but the implementation of the neural network will increase in the future and make the choice of themes for the future site much smarter.

Figure 2. Screenshot of system installation.

Comments to the figure:

Installation

Административные данные (Administration data):	Логин (Username): Введите логин базы данных (Enter the username of the database)
Введите логин (Enter the username)	Пароль (Password): Введите пароль базы данных (Enter the password of the database)
Введите пароль (Enter the password)	Сервер (Server):
	Далее (Next)

After selecting the theme, there begins an automatic installation of modules associated with this topic. Like all similar CMS-systems, Twinkle is divided into two general modules – the site itself and its

administrative panel. After installation, you must enter the administrative part, while the site itself is already available with its design and functionality. After installation, at the output there are two components: the front and the administrative parts of the site. In fact, it is impossible to influence the administrative part, that is, to supplement or change it, but the management of the front part is possible. These two components are controlled directly in the modular system. Each of them has its own settings. But they all work directly with the database. The database determines which modules are enabled and which are not available. All other settings are stored in the database. In the administrative panel, we adjust the site settings – the front part, depending on the administrative panel and the modules that were used during installation. All components of the system are dependent on the database.

The Twikle website management system provides many tools and functions that allow you to work with sites at the highest level. At the moment, Twikle is already of version 3.0. The new version is completely different from the previous two in almost everything, so it makes no sense to describe the previous two versions. But with each new version there are more new features and fewer bugs.

The most important task of the system is to create a website and provide tools for managing it. Currently, Twikle 3.0 supports the following main options:

- adding – the sections of the site with the parameters of adding, editing;
- templating – the option allows to change the site template and its styles;
- standard modules – the component makes it possible to install different types of modules on the site in the right place;
- user management – the option enables to manage registered users;
- SEO module – the module is used to customize the site for search queries;
- web services – the module contains various modules of other services, for example, Yandex. Kassa for accepting payments on the website.
- mail – tools for working with the internal mail.

These options form the core of the system. Of course, in the process of further work on the system, new kernel functions will appear. The main component of the engine is the control panel for sections and forms. It allows you to create an unlimited number of sections and automatic forms of addition to these sections. This section is one of the most important aspects of the development of a site management system. There are practically no site management systems without this component of work with users. This section also ensures the security of the system, as it regulates the process of access rights management. The Twikle management system provides access rights management for 4 categories: user, moderator, manager, administrator.

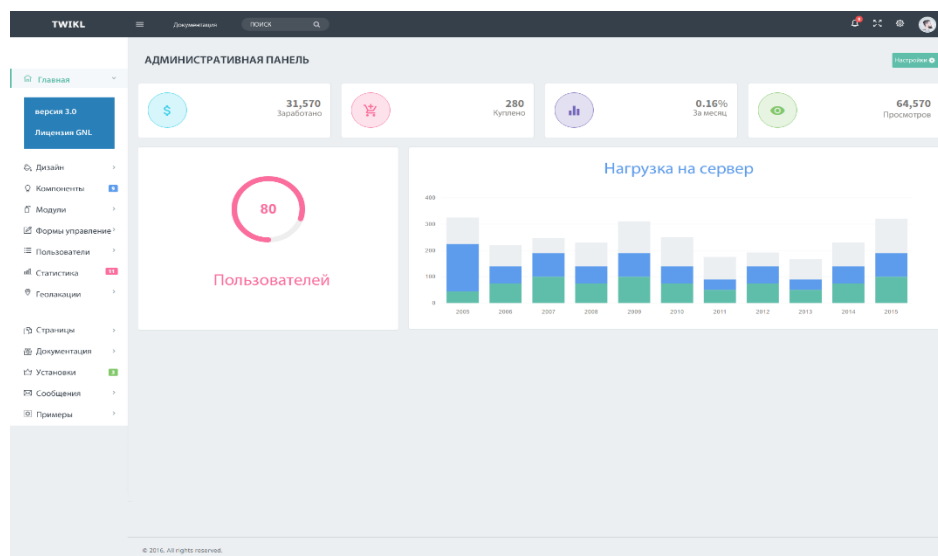


Figure 3. Home page of the Twikle website management system.

The “Web services” section stores third-party service modules. At the moment, Twikle supports the services of such companies as Yandex, Google, Amazon and Robokassa, PayPal.

Home page of the Twikl website management system (figure 3) – first and foremost is informative. On the left of the main menu of the system, at the top of the site you can find documentation, search, system alerts, settings and user profile

The main menu of the site (figure 3 – on the left):

- design – this page is for the general look and feel of the site customization;
- components – is a page for selecting the direction of the site;
- modules – provides a list of external and internal web services;
- forms of management – you can manage the forms of sections;
- users – allows you to manage users: delete, edit, view information;
- statistics – you can view the average results of attendance.

5. Conclusion

The presented software product is intended for quick site creation and its subsequent support. The developed Twikle site management system makes it possible to create a productive site faster and with the least knowledge.

Theoretical and practical aspects of the content management system architecture design are considered. The result of this stage of research is the creation of a model of the CMS TWIKLE and its modular component installation and the construction of a user-friendly interface.

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