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This book maintains articles on actual problems of research and application of information technologies, especially the new approaches, models, algorithms and methods of membrane computing and transition P systems; decision support systems; discrete mathematics; problems of the interdisciplinary knowledge domain including informatics, computer science, control theory, and IT applications; information security; disaster risk assessment, based on heterogeneous information (from satellites and in-situ data, and modelling data); timely and reliable detection, estimation, and forecast of risk factors and, on this basis, on timely elimination of the causes of abnormal situations before failures and other undesirable consequences occur; models of mind, cognizers; computer virtual reality; virtual laboratories for computer-aided design; open social info-educational platforms; multimedia digital libraries and digital collections representing the European cultural and historical heritage; recognition of the similarities in architectures and power profiles of different types of arrays, adaptation of methods developed for one on others and component sharing when several arrays are embedded in the same system and mutually operated.

It is represented that book articles will be interesting for experts in the field of information technologies as well as for practical users.

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EDUKIT: INFO-EDUCATIONAL PLATFORM ENABLING TO CREATE WEBSITES FOR SECONDARY SCHOOLS

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Abstract: This article focuses on computerisation and informatisation of Ukrainian secondary schools. Some of the problems can be solved with the help of modern technologies, for instance, by presenting information on websites. Website development for government-financed educational institutions presents a number of difficulties which often cause schools to give up the idea of creating their own official websites. This article presents EDUkIT, an open social info-educational platform, which enables national schools to create websites independently and at no cost and further develop them into a single school network as well as build an internal local school system.

Problems and prospects of school website development in Ukraine. Problem statement

Computers and information technologies have penetrated all areas of people's life, not to mention such socially significant sector as education.

To ensure a new type of interaction between the society and the system of education, we need to prepare, publish and spread information on the performance of the whole education system in general and each educational institution in particular. Recent years have shown that people are becoming aware of the growing need for more information. This demand is satisfied by means of periodicals and one-off publications, TV news stories, reports and public speeches describing the state and development of educational establishments. Apart from that, you can also draw information from modern technology sources, in particular websites.

The domestic and foreign experience of building websites for educational institutions shows that school website development presents a number of technical, technological, financial, organisational and managerial problems [Kravchina,2008], [Eelmaa, 2005] which, in most cases, cause developers to give up this idea. However, the new laws and the plan of school informatization set deadlines for creating electronic school representations in the Internet (e.g. as early as the end of 2009 in Kharkiv region [Pinchuk, 2008]). The study of the Ukrainian IT market (School Site – www.edusite.ru, uCoz Web-Services – www.ucoz.ru, Net School Ukraine – net.elnik.kiev.ua and others) has revealed that there is no simple, barrier-free, user-friendly, goal-oriented, yet gratuitous, solution of the above-mentioned task.

The EDUkIT platform as an info-educational system

EDUkIT is a non-commercial social initiative presented by the Stella Systems Company and the Eastern-Ukrainian Branch of the International Solomon University and sponsored by the Kharkiv Board of Education. The main aim of the project is to promote the introduction of information technologies into the Ukrainian educational system by creating official websites for secondary schools in Kharkov and Kharkiv region.

The project is based on the materials developed by Dialog WebDesign GmbH (Frankfort on the Main, Germany), whose official representative in Ukraine is Kharkiv IT-company Stella Systems.

The EDUkIT Project is an info-educational platform whose goal is to help schools create websites, further develop them into a single school network and, if necessary, set up an internal local school system. This business solution facilitates the information and experience exchange both at the level of a separate educational institution and at the level of the secondary education system as a whole.

School websites created on the EDUkIT platform are not just a set of autonomous information units, but an integral info-educational system in which all school websites are elements of a hierarchic structure equipped with process control and unification. It has to be pointed out that, apart from developing the platform, we are also using different ways of product distribution to deliver it to the end user as well as collecting client feedback. In other words, there is a close interaction between the manufacturer and the consumer.

Technical aspects of the platform and its performance capabilities

From the technical point of view, EDUkIT is a constantly developing Internet platform which enables building an unlimited number of websites united by a single structure and functions (see Pic. 1). All platform websites are organized into an integral system which centralises the storage of important information and provides easy access to it with the help of various resources. For example, after signing in at a school website, a teacher can look through the teaching aids of a colleague who has placed them there through a different website of the system.

This problem solution is based on the multifunctional content management system (CMS) called Pulsar developed by a group of authors with the help of free up-to-date technologies. Pulsar doesn't require any special technical knowledge or programming skills. This system enables you to add, edit or delete any website content, without resorting to anyone's assistance. All the changes you make to a school website created with the help of the system are carried out on a real-time basis. CMS Pulsar has an interface designed for numerous users which allows simultaneous editing of different website sections by several members of school staff whose access rights are controled by the system.

The website editing system is distributed as an Open Source, which frees its users from any further licence obligations or material liabilities.

The platform is developed with the help of top-notch foreign technologies such as Zend-Framework (www.zendframework.com), WYMeditor (www.wymeditor.org), jQuery (jquery.com).

The main modules of the platform are [Stepanovski, 2009]:

- News and events. You can publish news and/or events on a website and always keep them up-to-date. The home page displays only the news and events selected by the administrator. This kind of information always attracts the attention of website visitors and is indicative of the website's popularity.

- Service Order Form. Allows visitors to view the range of services on offer (for example, school clubs), select services they are interested in and order them on-line. After the user has applied, the information stated in the application form is sent to the administrator's address (or to the address of any other person in charge).

- Calendar of Events. The calendar will help organise and schedule events and activities for any dates. You can also divide the events into categories and highlight them with the help of editing tools.

- Opinion Polls. The purpose of this module is to conduct surveys, votes and polls of website visitors. This tool allows you to ask questions with the option of one or several answer choices, set time frames for polls and calculate statistical data.
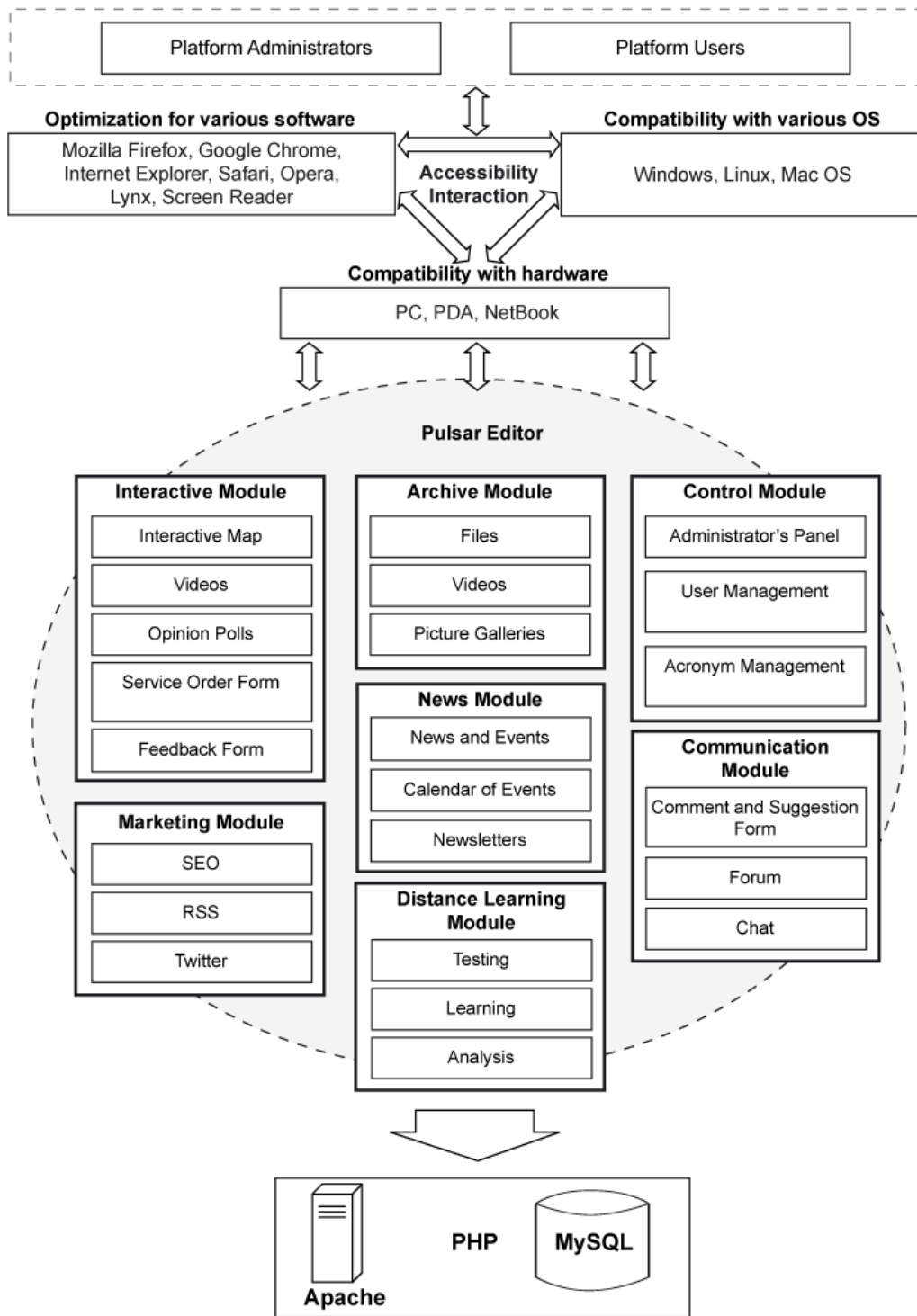
Figure. 1. EDUkIT Info-Educational System

- Feedback Form. Allows users to get feedback from the representatives of a school by filling in the form with their contact information. The completed form is sent to the indicated school address by e-mail.

- Comment and Suggestion Form. Allows users to leave comments and suggestions concerning the school performance on the website, which helps further optimise business procedures and satisfy the needs of the target audience. With the help of the editing system, you can add this form to any website page. To avoid obscene comments, we have integrated a function of moderation and a swear word filter of unprintable words and expressions. The comments are published on the page only after being confirmed by the administrator.

- Interactive Map. The Interactive Map with an itinerary marked on it will help users quickly find the way to the school they want to get to and work out how long it will take them to get there. The integration of Google Maps enables users to work their way to their point of destination.

- Newsletter. This module enables website visitors to subscribe for regular newsletter delivery and manage a great number of subscribers. The newsletter delivery template is adapted to the corporate design. Users subscribe for newsletter delivery (or unsubscribe) on their own, without school staff's interference.

- Search Function. The function of search within the website is necessary for Internet resources which contain great amounts of information as it helps visitors find their bearings on the website. The function of simple search is usually located on top of the website page. If you are not satisfied with the search results, you can use advanced search, which allows you to specify your request.

- Video Gallery. Enables you to upload on the website an unlimited number of videos in the *.flv format. To play a video, you can use the player integrated into the website which has a function of full-screen view.

- Picture Galleries. The system allows you to create and edit Picture Galleries at any section of the site without anybody's assistance. You can easily move pictures from one collection to another, change their captions or delete them from the website. The size of the pictures is automatically adapted to fit the screen. Full-screen view is also available.

- File Archive. The file archive can store documents in *.doc and *.pdf formats as well as photo-, audio- and video-materials which users can download and store on their computer. The module enables a school to keep all their files in one place as well as systematise and group important materials.

Websites created with the help of EDUkIT meet the international website quality standards of World Wide Web Consortium (www.w3.org) and are barrier-free. In other words, this means that school websites are user-friendly, and their main functions work on monitors with any screen resolution, including mobile devices. The content of such websites is accessible to screen readers, special programs which reproduce the screen content either in the form of speech or with the help of Braille display. Thus, new school websites embody one of the main concepts of education – accessibility to the maximum number of people, regardless of their technical and physical abilities.

Platform approbation and distribution

The experiment of software product distribution began in February 2009, when we gathered the first group of 18 schools and 3 computer technology laboratories of the Kharkiv Board of Education.

To facilitate testing and ensure its continuity, we created a technical support website www.edu.kh.ua (see Figure.2) which contains not only information about the project, news and contact information, but also a **full user manual** [Stepanovski, 2009] **and video lessons on how to use the platform**. We have created a forum for EDUkIT users, where anyone can anonymously get specialists' consultations on any questions they are

interested in and share experience with other project participants. In addition, there is a blog of the project, social network groups and a telephone hotline available five days a week.

Figure. 2. EDUkIT technical support website (www.edu.kh.ua)

Thanks to the efficient feedback from the target group representatives, we have been able to carefully study their needs and wants. As a result, the platform is developing in the right direction – taking into account the particularities of secondary schools.

The testing period among the first project participants and the exchange of opinions gave EDUkIT impetus to further development. At the request of the public, we added new features to the platform, including small graphic changes to the website design, language selection according to the school's language of instruction, integration of any number of additional language versions, etc.

To help new project participants use the platform with the highest efficiency and at the same time to receive first-hand recommendations and comments, EDUkIT managers conducted dozens of seminars-presentations in Kharkiv and Kharkiv region. They gave practical training sessions and explained the facilities of the platform. Moreover, school representatives had an opportunity to get individual consultations and communicate with the developers.

As of April 2010, as many as 219 Kharkiv schools and 37 Kharkiv region schools have joined the project, which constitutes 97% and 4% of the city's and region's schools accordingly. Most schools decided to use the product because of:

- its simplicity and user-friendliness;
- the common principle of editing for all websites;
- the efficient technical support;
- the introduction of a multi-module structure – a true enhancement to the platform;
- the product accessibility, regardless of users' material and technical abilities.

At the end of the first stage of EDUkIT introduction, in October-November 2009, we held the Contest for the Best School Website created using as many EDUkIT facilities as possible (see the sample of a website winner – Figure 3).
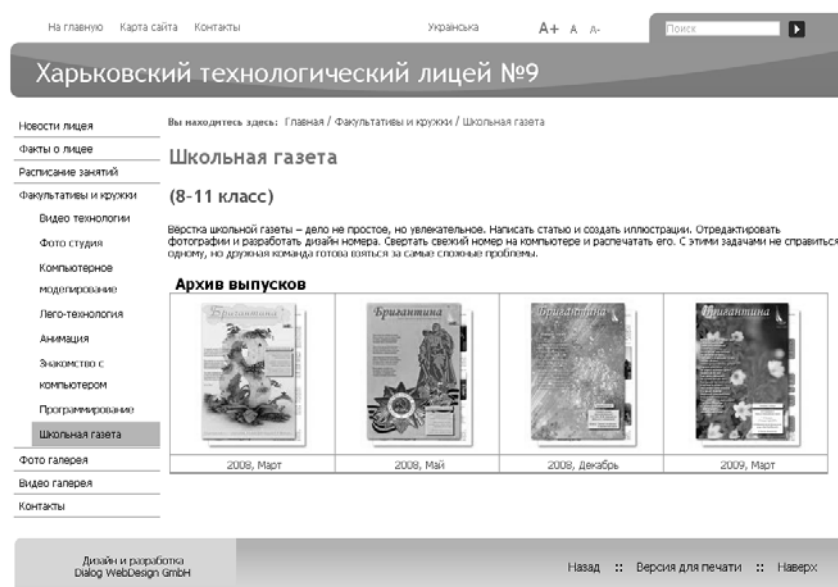

Figure 3. The website of Technological Lyceum # 9 created on the EDUkIT platform (www.lyceum9.edu.kh.ua)

Conclusion

At present, the EDUkIT Project is steadily developing: we are continuing to collect client feedback as well as working on the technical enhancement of the product, producing new versions and making presentations at topical conferences [NevaCamp, 2009]. We are also planning to introduce the platform in other regions of Ukraine and other countries of the CIS.

The experience of November 2009, when school websites succeeded in distributing homework assignments among students at the time of the lengthy quarantine due to the flu epidemic, shows that the platform could be further used in distance learning. We are already making the first steps in this direction – trying out the developed module of computer-aided students' knowledge testing, which is expected to be in demand owing to the introduction of compulsory external independent testing in secondary schools.

Bibliography:

[Kravchina,2008] Кравчина О. Є. Інформатизація організаційно-управлінської діяльності в загальноосвітній школі / О. Є. Кравчина // Інформаційні технології і засоби навчання [Електронний ресурс]. – К.: Інститут інформаційних технологій і засобів навчання АПН України, 2008. – № 3 (7). – Режим доступу до журналу http://www.nbuv.gov.ua/e-journals/ITZN/em7/emg.html.

[Eelmaa, 2005] Ээльмаа Ю. В. Школьный сайт – это просто? / Ю. В. Ээльмаа // Проблемы автоматизации управления образованием. – Москва, 2005. – № 1.

[Pinchuk, 2008] Пинчук А. В. Школьные сайты: проблемы и перспективы / А. В. Пинчук // Информационные и коммуникационные технологии в образовании и научной деятельности, 21-23 мая 2008 г. – Хабаровск, 2008. – С. 206–208.

[Matkin, 2008] Маткин А. А. Сайт школы – не роскошь, а средство продвижения / А. А. Маткин [Электронный ресурс] // Справочник классного руководителя. – 2008. – № 5. – Режим доступа к журналу http://klass.resobr.ru/archive/year/articles/565/.

[Stepanovski, 2009] Степановский А. Ю. Социальный образовательный проект «EDUkIT»: разработка сайтов для средних учебных заведений / А. Ю. Степановский, С. О. Рыжикова // Одиннадцатая научная конференция ВУФ МСУ «История. Компьютерные науки. Экономика»: Тез. докл. – Х.: Тарбут Лаам, 2009. – С. 36–41.

[NevaCamp, 2009]Материалы международной конференции в области веб-технологий, стартапов, инвестиций «NevaCamp», 26-28 июня 2009 г. [Электронный ресурс] – Санкт-Петербург, 2009 – Режим доступа к материалам конференции http://nevacamp.com/ru/nevacamp09.

[Stepanovski, 2009] Руководство пользователя по работе с редакционной системой платформы «EDUkIT» (www.edu.kh.ua) / [А. Ю. Степановский, С. О. Рыжикова, Д. П. Нечипоренко и др.]. – Х.: ВУФ МСУ, 2009. – 66 с.

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