SOFTWARE SUPPORT OF BURGLAR SYSTEM DESIGN FOR SECURITY LEVELS 1 AND 2

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ABSTRACT

This paper deals with software support implementation of burglar system design for security levels 1 and 2 based on web technologies. Created web-based application along with used technologies and programs, purpose and advantages of this project for wide audience or anyone interested are described.

1. INTRODUCTION

The increasing amount of crime encourages greater emphasis on safety not only in terms of possible theft or disclosure of secret assets, but rather to protect their own health. The burglar system is unable to prevent entering unauthorized persons into the guarded object, but it is able to reliably inform of its breach and minimize possible damage and lost.

The aim was to study and become familiar with the issue of burglar systems and its design, and thus also become familiar with the functions, properties and principles of individual components usage. Then, with gathered information, to create a suitable methodology for burglar system design for security levels 1 and 2, and its practical usage to implement software solution based on web technology with an interactive and intuitive graphical interface that allows to create high-quality design even for laymen.

2. BURGLAR SYSTEM DESIGN

Burglar system design [2] is a process that determines the scope of the system, security level, its components, the countermeasures selection and the class environment. During this process an appropriate type of centre and cabling, the number and type of detectors, type of control and indicationg devices, and additional equipment is selected. Burglar system design also serves to estimate the system.

Figure 1 shows the sequence of events of the general burglar system design.

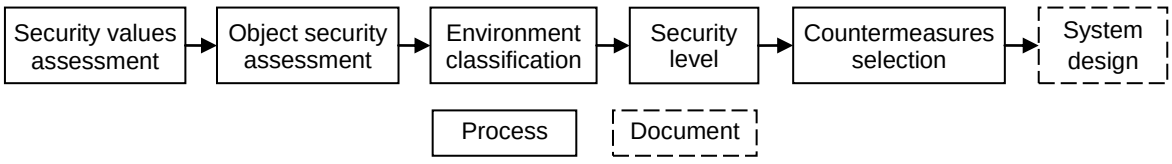


Figure 1: General burglar system design

On the basis of obtained information the general burglar system design was simplified only for security levels 1 and 2 (most commom for households) as shown in Figure 2.

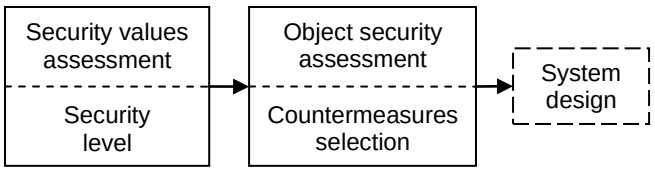


Figure 2: Created burglar system design for security level 1 and 2

3. BURGLAR SYSTEM DESIGN WEB-BASED SOLUTION

Created website [1] provides user information about the burglar system, its architecture and components and about its design. The website allows user to create text and graphic burglar system design of his own object that can be used as a full-fledged draft. The website is in czech language only and is available online at *http://ezs.labskalouka.cz*.

3.1. USED TECHNOLOGIES AND PROGRAMS

The website was created in Drupal with FCKeditor module (WYSIWYG editor). Text design was created using the PHP language and MySQL. Graphic design was created using Adobe Flash, Adobe Flex Builder and ActionScript language. These technologies and programs were selected because of its performance, speed, and user simplicity.

3.2. WEBSITE

Figure 3 shows the hierarchy of the website.

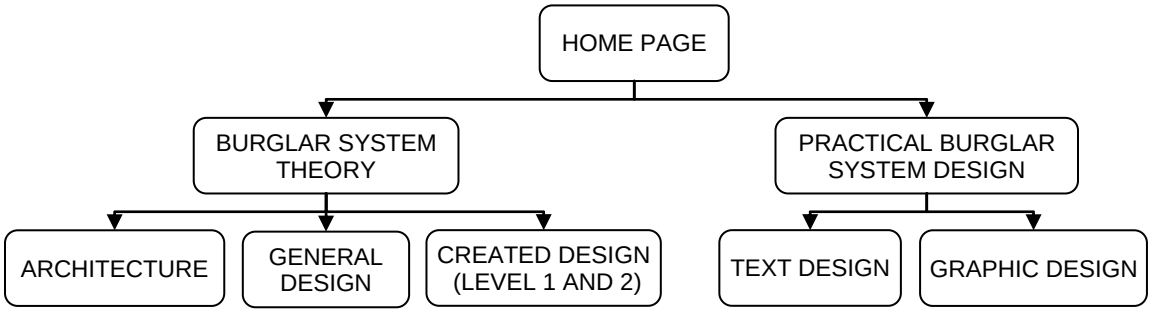


Figure 3: Website structure

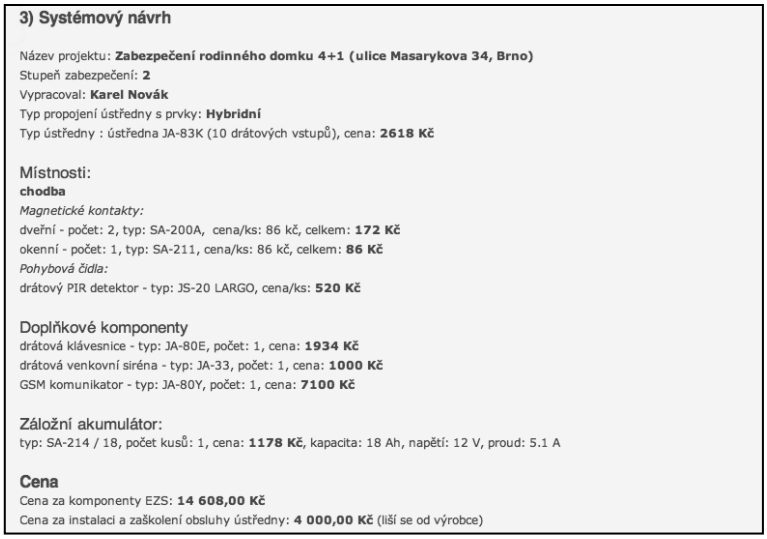
The purpose of this project and its benefits to the user are described on the home page. The user decides whether he takes up with the theoretical introduction to the burglar systems or whether he goes straight to the practical burglar system design.

The theoretical part provides information about the burglar system architecture, burglar system design and established methodology for the burglar system design for security levels 1 and 2.

In the practical part the user, on the basis of gained information and interactive help, can create high quality burglar system design that meets all the conditions for reliable function in real traffic.

3.3. TEXT DESIGN

Text design determines the correct number of rooms, corridors and passages to secure, the negative factors affecting the whole system activity, its appropriate type and number of components and provides estimate system price. This information will be needed for precise graphic design. The text design consists of three main steps and its result is a system design as shown in Figure 4.



3) Systémový návrh

Název projektu: **Zabezpečení rodinného domku 4+1 (ulice Masarykova 34, Brno)**
Stupeň zabezpečení: **2**
Vypracoval: **Karel Novák**
Typ propojení ústředny s prvky: **Hybridní**
Typ ústředny : ústředna JA-83K (10 drátových vstupů), cena: **2618 Kč**

Místnosti:
chodba
Magnetické kontakty:
dveřní - počet: 2, typ: SA-200A, cena/ks: 86 kč, celkem: **172 Kč**
okenní - počet: 1, typ: SA-211, cena/ks: 86 kč, celkem: **86 Kč**
Pohybová čidla:
drátový PIR detektor - typ: JS-20 LARGO, cena/ks: **520 Kč**

Doplňkové komponenty
drátová klávesnice - typ: JA-80E, počet: 1, cena: **1934 Kč**
drátová venkovní siréna - typ: JA-33, počet: 1, cena: **1000 Kč**
GSM komunikator - typ: JA-80Y, počet: 1, cena: **7100 Kč**

Záložní akumulátor:
typ: SA-214 / 18, počet kusů: 1, cena: **1178 Kč**, kapacita: 18 Ah, napětí: 12 V, proud: 5.1 A

Cena
Cena za komponenty EZS: **14 608,00 Kč**
Cena za instalaci a zaškolení obsluhy ústředny: **4 000,00 Kč** (liší se od výrobce)

Figure 4: System design

3.4. GRAPHIC DESIGN

Graphic design is based on an interface allowing the user to draw chosen object groundplan on drawing canvas, to mark all rooms and corridors and all the peripheral passages (windows, doors, garage doors) that should be secured, depending on the object security level, to correctly put in this object necessary components to meet the principles of installation and proper function. Step by step an interactive helper shows how to progress further.

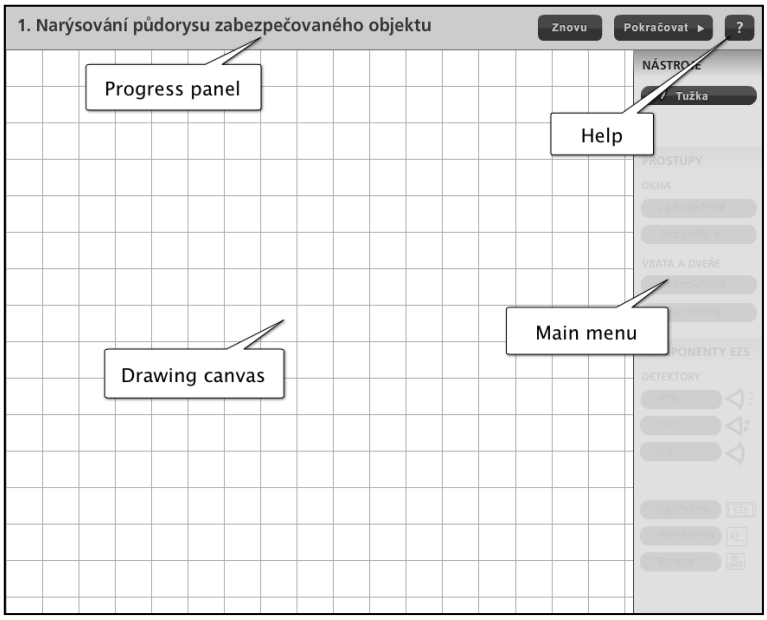
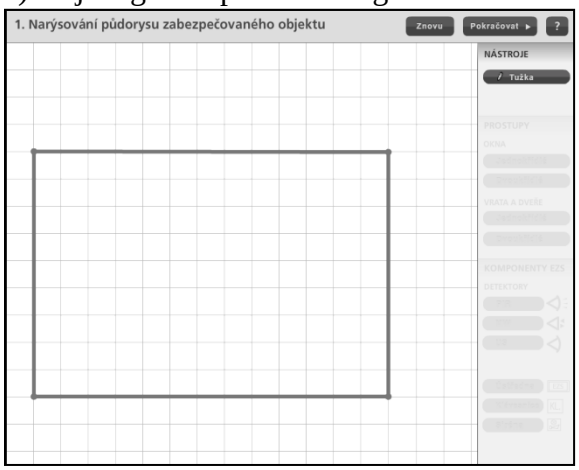


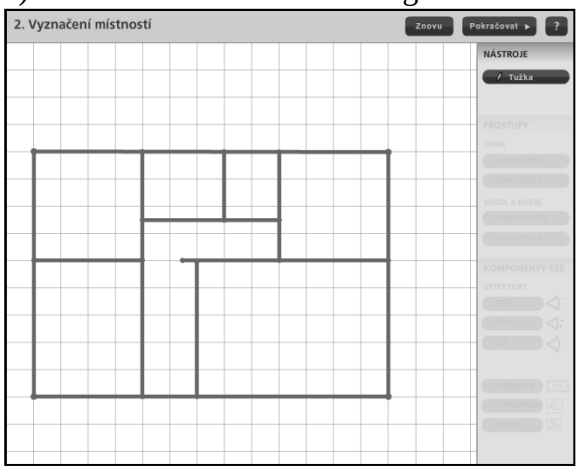
Figure 5: Graphic interface

The graphic design consists of four main steps:

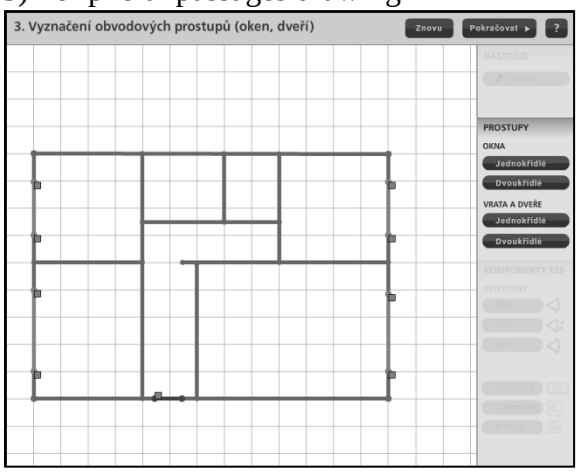
1) Object groundplan drawing



2) Rooms and corridors drawing



3) Peripheral passages drawing



4) Components drawing

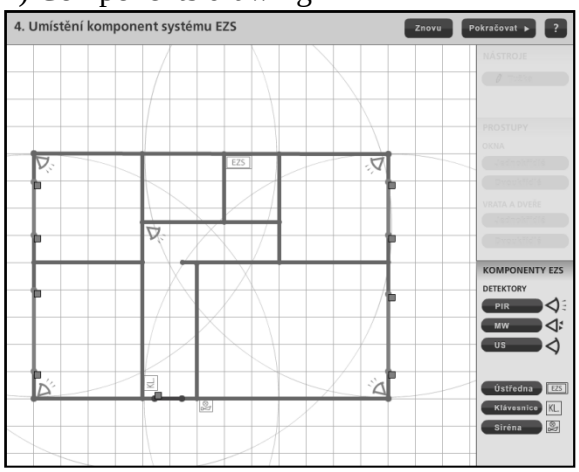


Figure 6: Graphic design progress

For a high quality burglar system design it is necessary to create both of the designs.

4. CONCLUSIONS

The idea of this project was not to create a burglar system design software solution that will do the whole design itself, but to provide such information and advice through which the user could correctly decide where and why to place the components, what type and number of individual components to use and to estimate burglar system price.

The website was primarily created as a teaching tool for the Security Systems subject at the Brno University of Technology but it is also available for wide audience or anyone interested online at *http://ezs.labskalouka.cz*.

5. REFERENCES

[1] VYMAZAL, M.: *Software Support of Burglar System Design*, (in Czech). Master Thesis. Brno University of Technology, Brno (2009).

[2] KŘEČEK, S. a kol.: *Příručka zabezpečovací techniky*. Blatenská tiskárna, Blatná 2003. ISBN 80-902938-2-4.