

# ÍRISZ – the Smart Communication System

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**Abstract** — For improving the quality of the customer relation services a higher education institution cannot keep off the introducing a smart communication system. The aim of this paper is to describe the project “Írisz” carried out by the Alba Regia Technical Faculty of Óbuda University. The project focuses on the support of communication between university’s offices, under-graduated and graduated students, representatives of the labor market, and also the local government. The topics of the paper includes the aim of the project, the software architecture and development methodology chosen for the application, the constraints of data management, the main functions of the smart communication system, and the queries of output data, as well.

## I. INTRODUCTION

The by demographic crises caused competition for the student candidates, the fulfillment of labor market needs, the reforms performed in higher education are brought new challenges – besides on elementary requirements on improving the education quality – is the introducing new communication channels between the representatives of the higher education and the labor market.

The president of Commerce and Industry Chamber, László Parragh in several publications and interviews recommended the institutions of higher education to open the doors in the direction of labor market, to make the education more offend and practice-oriented [1].

The Ministry of Human Resources supported this idea and responded to this challenge with the starting the pilot program of dual education not only in professional high school branch but in higher education, too. Several activities of Széchenyi 2020 program had set the goal to support this purposes.



Figure 1. The starting page of Írisz 2.0 System on a desktop PC



Figure 2. The starting page of Írisz 2.0 on a mobile phone with small (720p) resolution

## II. THE ÍRISZ PROJECT

The introducing of dual education, and also the more intensive organization of traineeship programs for the students increased the amount of administrative task for the university’s officers. The local government, and personally the Mayor took active part in the motivation of firms, and organization on participation in dual education. The increasing administrative work indicated the development and introducing of a smart and modern communication system.

### A. Applied Software Development Methodology

The main features of software design were a tried and stable data base system. a thin client-server architecture, also a user interface with attractive graphical elements. The most important point of view was the responsive design, ensuring that the page can be shown correctly on many different type of devices (like mobile phones, televisions, laptops, tablets, etc.) with the same code.



Figure 3. The student's registration page on a mobile phone



Figure 4. The company’s registration page

First of all, the aim was to develop a responsive Web-site. This is the reason why the design was based on Bootstrap. This is a new technology, invented by two developers from the Company Twitter. It is based on Cascade Style Sheets (CSS).

The application was developed using PHP programming language with object oriented language components. The database manipulation carried out with the built-in PHP Data Objects functions (PDO) which is not the fastest way to data selecting from databases but it’s got a big advantage. The database can be changed behind the scene and the Web-site continues to work correctly.

Secondly, a new database schema was designed to store more type of data over students and companies.

**B. Basic Data**

By the development of data base, the intentions and constraints of data management regulation of Hungarian National Statue about the Higher Education [2], and also the Data Security Regulations of Óbuda University [3] must be satisfied.

The users of the communication system are the following:

- system administrator
- university teachers
- university officers
- undergraduate students
- graduated students
- representatives of organizations, firms, and companies
- representatives of local government.

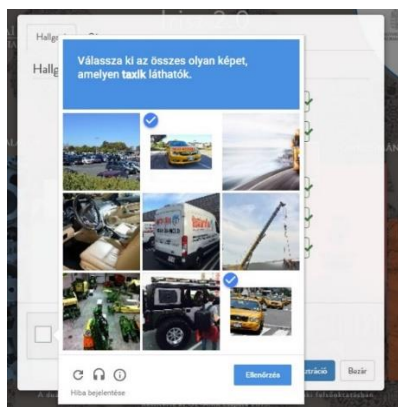


Figure 5. Captcha from Google at the registration screen

The registration and data entering is voluntary for the users. The users are distributed in three user group

- administrator
- private user (Fig.3)
- company (Fig.4).

The basic data can be imported from the user’s Facebook profile, as well. The registration page contains an anti-robot control picture test – developed by Google. These captcha programs are very useful to avoid a denial of service attack. (Fig.5)

In the base data the students can maintain their profile specifying the personal skills, practices and fields of interest.

**C. Workflow**

The main function of the system is the communication between the registered users. The main communication channels are shown on the Fig.6.

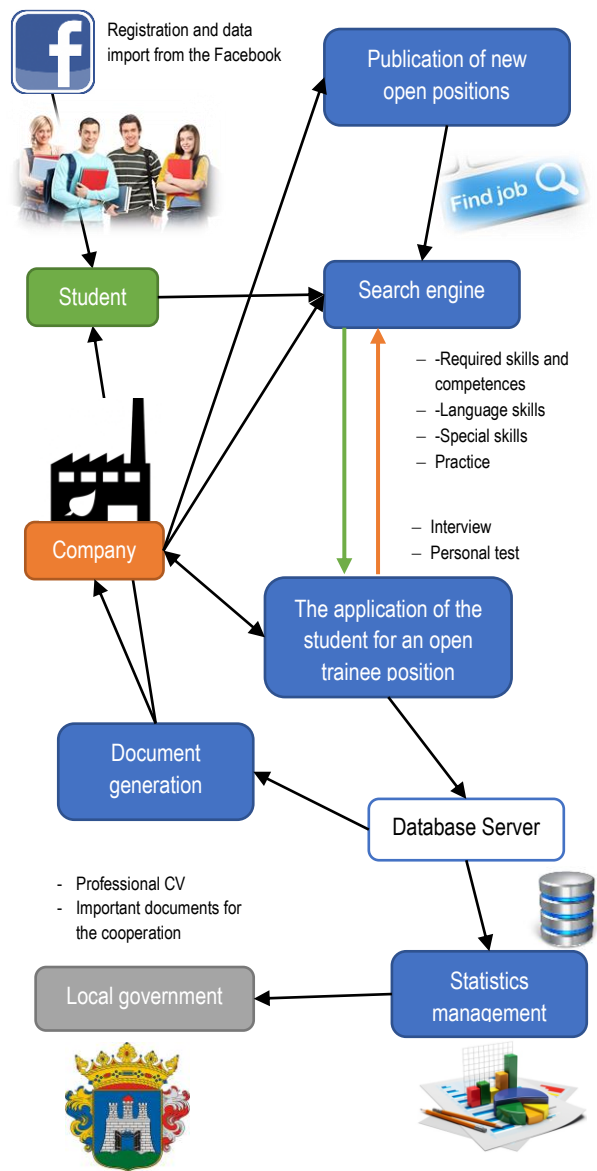


Figure 6: Írisz 2.0 – Tuned for cooperation



Figure 7. Job announcement on mobile phone

The communication system allows the companies

- to upload their free places for trainee programs or open job positions in which they define exactly the required professional skills, the level and type of foreign language, several practices
- announces projects or themes for final thesis's
- to choose competent worker.

The communication system helps

- the undergraduate students to brows in appropriate trainee places
- the graduated student to brows in several jobs
- to find a convenient trainee program or job for graduated students
- to find an interesting project or theme for final thesis.

The communication system supports

- the university administration in organization and management of the trainee-programs (Fig 8)
- the local government in supervising of labor market.

Fig. 9 shows the data query using the special search engine developed special for this system. The requirements of the companies for the different jobs are compared with the abilities of the students. As soon as a student is logging in to the system, the search engine automatically lists the positions, that are relevant for the student's interest and skills.

We had a big dilemma by the developing of the search-engine. First we wrote an algorithm that generated only the positions with exactly strait language skill requirements for the students.

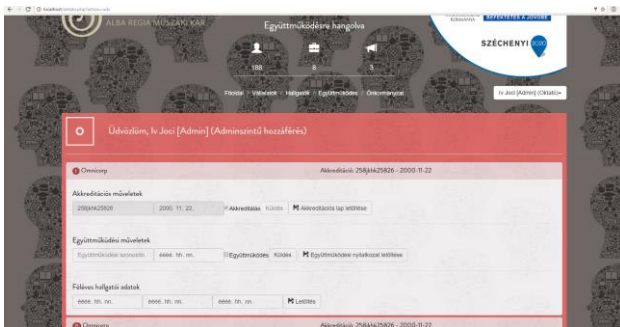


Figure 8. Management of company's processes



Figure 9. Data queries

This way we got only a few hits by every running time. The program code was so modified that every different level of language skill is shown for the students, not only their own level.

1.) Szak, tagozat megjelölése

szak pontos megnevezése	tagozat	szakirány	modul
Mérnök-informatikus BSC	Nappali		-

2.) Az általam tervezett terület (az ismert adatok megadását kérjük)

cég neve:	Omnicorp
cég akkreditációs száma*:	258jkh25826
székhelye:	Úrhida Budapest út 7/4.
kapcsolattartó neve:	Kun Béla

3.) A megjelölt gyakorlati helyen teljes munkaidőben veszek részt a gyakorlaton.  
4.) A gyakorlatot teljesítő hallgató adatai:

név:	Ivanics József
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tanulmányi félév megjelölése:	0. félév
telefonszám:	+36305531111
e-mail cím:	ivj94@freemail.hu
gyakorlat teljesítésének tervezett időintervalluma:	
az abszolutóriumhoz csak a szakmai gyakorlat teljesítése hiányzik	igen / _nem_

Figure 9. Student's application data sheet

#### D. Output Data

Every user – who has been registered – in the system can print in pdf format the required documents, that are needed to make a successfully cooperation between our university and the members of the business life.

The students can apply for the announced places by sending professional CV and application data sheet generated in system. (Fig.9)

The companies have fourteen days to accept or reject the student's application. This is a period for the company to call the students for personal interview. If the student is rejected by the company, he/she can choose another free position. Fig.10. shows the list for admitted applicants by the company.



Figure 10. The list of students

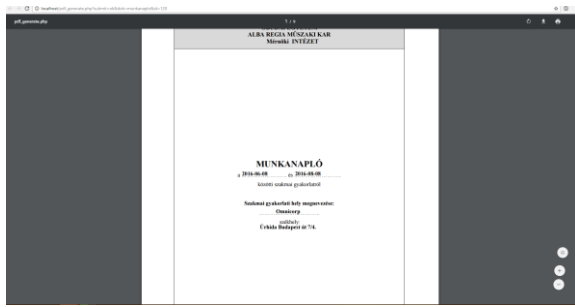


Figure 11. Student's work log

For the accepted by a company student the system generates the related documentation, for example the work log. (Fig.11)

The collaboration between the companies and the university based on cooperation agreement registered official by the Education Office of the Ministry of Human Resources. This agreement can be generated by the Írisz system, too. (Fig.12)

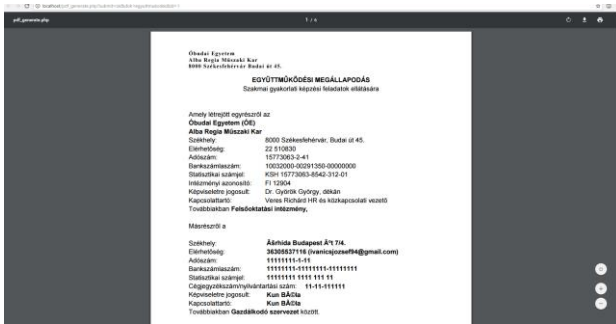


Figure 12. Cooperation agreement between a company and the university

Different type of statistics about the cooperation of higher education institute and representatives of labor market can be generated by the new version of the program. These statistics were required by the local government. (Fig. 13)

### III. CONCLUSION

The introducing a smart communication system brings a new age into the administration process. The development team hope that the using of the system makes more easy the communication between the parties in education process.

Top 10 legaktívabb hallgató	
Top 10 legaktívabb cég	
Legtöbb belépett 10 hallgató	
Legtöbbet keresett 10 kompetencia	
PHP fejlesztés	18 darab keresés
.net fejlesztés	16 darab keresés
Új termékek bevezetése	14 darab keresés
Adatanalízis	10 darab keresés
Android fejlesztés	10 darab keresés
Adattárhoz fejlesztés	10 darab keresés
C# fejlesztés	8 darab keresés
MS-SQL adatbázis adminisztrálás	4 darab keresés
Delphi fejlesztés	4 darab keresés
C++ fejlesztés	4 darab keresés

Figure13. Statistics

### ACKNOWLEDGMENT

The authors of this paper express their thanks and appreciation to the members of Írisz project's software development team.

The original version of Írisz 1.0 system was developed by Kertész Gábor. The development project was sponsored by TÁMOP 4.2.3/12/KONV-0039 activity of the Széchenyi 2020 program. The general goal of this activity was to force the application of student candidates and the development of teaching staff.

The new version, the Írisz 2.0 system was developed by Ivanics József, Németh Barna, Zsobrák Krisztián, with the team leader Hatályák Dezső. The development of the new version was sponsored by TÁMOP-4.1.1.F-14/1/KONV-2015 activity of the Széchenyi 2020 program. The aim of this project was the introduction of dual education system in the Alba Regia Technical Faculty of Óbuda University.

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- [3] The Data Security Regulations of Óbuda University. Az Óbudai Egyetem Adatvédelmi Szabályzata. See more at: <http://uni-obuda.hu/files/private/regulation/488/obudai-egyetem-adatvedelmi-szabalyzata.pdf>