



__Customer__



The customer is İZODER (Heat, Sound, Water and Fire Insulation Manufacturers' Association). It is built in

1993 with the aim to promote nationwide awareness

of insulation. It concatenates all thermal, water, sound and fire insulation material manufacturers, vendors and practitioners under one roof.

There are more than 30 different Profession Certification Program in Türkiye and one of them is "Sufficiency Related Profession Certification Project in Insulation Sector" (TR0702-13.03/07) **QBECTIS**. This project was supported by European Union and the leader of this project is İZODER. The main goal was to protect the market that they present, to prepare common sufficiency level definitions and standard that will be valid in whole sector and to create a test and certification system according the created definitions.

The created standards are approved by MYK (Vocational Qualification Authority). After these standards are published, a question bank was prepared containing more than 4.000 questions by İZODER and its subsidiaries.

To test the sufficiency of the candidates, they wanted to create a theoretical and practical test center. İZODER chose Maysistem as a partner because of his previous "Work Performance" and "Sufficiency".

__Project__



İZODER had prepared 4 standards for each of the professions. To test the candidates according their skills, they had to have first a theoretical test center. They decided to have minimum 2 test center, one local and one remote. The remote one was for other cities and had to be portable but always connected to the main center. Each of them had to have the capability to test 10 persons at a time. Because these centers would have test for 4 types of profession at the same time, they also wanted that test system has the ability to create different tests for different profession at the same time. The testing infrastructure had to be fully automatic. After the operator entered the candidates, the rest should be done by the test system automatically. It should create the test, to record them and end the test when the time is over.

We thought together that it had to have one main server where local and remote units would connect and if remote terminals couldn't connect to main server, they would work with their selected local server. The operator would just start the test. After the end of the theoretical test, the candidates would have a practical test and all the results according the checklists would also be transferred to the server. The server would calculate the level of proficiency of the candidate and prepare a personal certification for each candidate who was eligible. For the rest, it would prepare a success ratio list according to each sublevel of the profession and would suggest a training program.

__Solution__



The project was designed as server based database communication enabled. We planned to create a MultiUser Client/Server infrastructure. According to that design, the operator would enter the candidate list to the server with the test date/time and test type for each candidate. For each candidate who would take exam, the operator would tell the server that the candidate was ready and server would automatically assign a PC for her/him. Server would create exam's questions for each of the candidates separately.

The tricky part was the management of the question tree. Even two candidates who were taking the exam for the same profession (e.g. water insulation level 1) would not have the same question list to prevent cheater. If the selection of the questions was random, this might create exams with different levels of difficulty. This might cause trouble for the future credibility of the system. We had to create a system that will assure that each of the candidates taking the same profession exams would have different questions with the same difficulty level.

To prevent that, we separated all 4.000 questions to difficulty levels with the help of academic personnel. The system was designed to choose questions for each profession and level of certification with equal levels of difficulty.

Another important aspect was the age of the questions. Even in the same category and difficulty level, one question would be asked randomly more than another question. This might cause the question to be learned by the future candidates. For that problem, we created AI algorithms for question aging.

To reduce the amount of operator interaction with the system, we created the terminal software that was aware where it was running (local or remote) and was acting accordingly and parallel with the other copies of themselves.

For the test, IZODER had opened all terminals and server. They entered 10 different profession and expertise level candidates to server and they started the exam. All 10 terminals opened simultaneously any showed 10 different question sets and exam durations. All terminals were working as a remote terminal as expected. As an addition, we added an operator screen showing to the operator the remaining time and the ratio of the answered/unanswered questions of each test. IZODER was pleased.

__Conclusion__



The project is now active. IZODER is doing theoretical and practical test by using this system and they are producing certificates. You can reach the detailed explanation of the project from the original website: <http://www.qbectis.com>

__Result__



MAY SİSTEM MÜHENDİSLİK San. Tic. Ltd. Şti.

Sahrayıcedit Mah. Orta So. No:32/14 Kadıköy / İSTANBUL / TURKIYE
(+90 216) 358 70 95 / (+90 216) 368 54 35
bilgi@maysistem.com - <http://www.maysistem.com>

All rights reserved
Document ID : MaySS.2012-1