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Credit Card System for Subsidized Nourishment of University Students

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EXECUTIVE SUMMARY

In Croatia the Ministry of Science and Technology is the major provider of funds for high education. There are four universities, each consisting of a number of relatively independent and dislocated faculties and academies. In 1997, the Ministry engaged the authors to computerize the system for subsidized nourishment of the university students. The initial plan was to establish a simple credit card system. Faced with political and technical infrastructure difficulties, the authors had to develop a heterogeneous distributed database scheme and develop proprietary replication mechanism, capable to exchange high volumes of data over a slow network or over dial-up networking. The system has achieved full functionality at the largest university in Croatia, and it is ready to be installed in the rest of the country. Although developed under tight budget, it has significantly improved the organization and it provides valuable data for conducting the policy of subsidized nourishment.

BACKGROUND

In Croatia for the majority of university students, no tuition is required. Moreover, the state provides for some of them subsidized housing and for all of them who are free of tuition, it subsidizes the nourishment in contract restaurants. The funding and responsibility is with the Ministry of Science and Technology. The Ministry itself had computer equipment and islands of computerization, which still could not be called an integral information system. Faculties and academies vary in size, from a few dozen students to thousands. Their level of organization and computerization varies heavily. Some have computerized most of their administrative functions (Kalpic & Mornar, 1994), while some do not have even the connection to the Croatian Academic Research Network (CARNet) (Pale & al., 1992), or in other words, they do not have Internet access.

The annual amount offered to students in the Zagreb area was US\$37,780,000. Out of this amount, the students have consumed the value of 13,423,000 US\$. Precise data about all expenditures are stored in the database. An approximate amount of consumed subvention in the whole country is nearly US\$20 million or expressed in the local currency, 160 million HRK.

Table 1: Number of Faculties and Students in Croatia for Subsidized Nourishment

University	Number of faculties and academies	Number of scheduled subsidized students	Number of contract restaurants
University Zagreb	35	51,662	35+7
University Rijeka	13	2,734	7
University Split	14	6,906	16
University Osijek	11	3,373	9
Colleges	38	7,239	
Independent faculties and academies	11	3,907	
Sum	122	75,821	35(existent) + 39(planned)

SETTING THE STAGE

The system of providing the subsidized nourishment to the university students had been based on coupons for a long time. At the beginning of every month, regular students were allowed to buy a certain quantity of coupons that they could exchange for meals valuing roughly four times more than they had paid for the coupons. In other terms, they paid a quarter of the price for every meal, the rest being a subvention by the Ministry of Science and Technology. It had been noticed that this system was not performing satisfactorily for several reasons. A considerable number of misuses and frauds were perceived, from trading coupons from one person to another, to using the coupons for purchasing goods like cigarettes, detergents and even lawnmowers. In addition, the students were required to buy coupons in advance at some offices, which involved superfluous administrative work. The students were wasting their time waiting in queues. In this system, there were three principal players, the Ministry, the students and the restaurants for students.

Some restaurants allegedly cooperated with the students in abusing the purpose of the subvention. Without having a meal, a student could sell his/her coupons to the restaurant at a price that was higher than the nominal coupon value, but was less than the respective subvention. By delivering coupons to the Ministry, the restaurant collects subvention for a meal that was not consumed. The subvention money would miss its purpose and end up in the student's pocket and on the restaurant's account. In the previous system, each individual was entitled to buy an amount of coupons that depended on the place of residence. Students residing in the place of study could buy an amount that allowed them one complete meal a day. Students residing out of their place of study could buy twice as much. Initially, the system was meant to give the students their daily rights to receive one or two meals at a subsidized price. That would be rather simple to implement, but the Students Council did not accept it. They insisted on monthly amounts, which were eventually approved, making the system considerably more complicated.

Now each student has an account on which he/she receives a certain sum at the beginning of the month. The amount on the account can be changed at any time if the student's level of rights has changed, and, of course, after the student has consumed a meal in a restaurant. Wishing that the funding be properly applied and to discard or minimize abuse, in 1997 the Ministry decided to start the development of a computerized credit card system for that purpose. The card was named X-card as an acronym of the Croatian term for the student identification card. The X-card was conceived not only for usage at the student restaurants, but also for other purposes, like getting discount in the museums, at public transport companies, etc. The ultimate goal was to eventually replace what is now called the

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