

Access Control, Ticketing and Booking System for Sports Halls

SDD Information Technology Group has developed system for ticketing, booking and access control for sport objects.

The system is based on contact less smart cards (RFID technology), which enables efficient and economical booking and ticketing, employees' time attendance registration and visitors' access control.

We deliver complete system to our clients – high quality equipment and functional software, adjusted in accordance to the needs of the sport object management team. Special attention is given to the protection against unauthorized entrance.

By providing the complete service we tend to ensure security and comfort to our clients.

The team of highly educated and experienced programmers and engineers will take care of your needs. We will design and implement a customized solution that will save your time and resources, increase productivity and security, protect you against forgery, improve controllability and organization of business operations.

Our activities spread on the after-sales. We provide services such as deployment, training and online and on-the-spot support during the warranty period and after it.

Which are the key elements of this system?

- ITG-TicketSales: application software for booking/ticketing
- ITG-TicketControl: application software for access control in sport hall
- ITG-Pass: application software packet for season tickets selling and updating (smart cards)
- ITGbtt-0x: revolving barrier with barcode readers and smart cards readers (MIFARE® cards)
- ITGsr-05: smart card readers for access control and working time registration
- ITG-Fitness: application software package for Fitness center administration
- Tickets for sport events – paper tickets with bar code and plastic smart card tickets

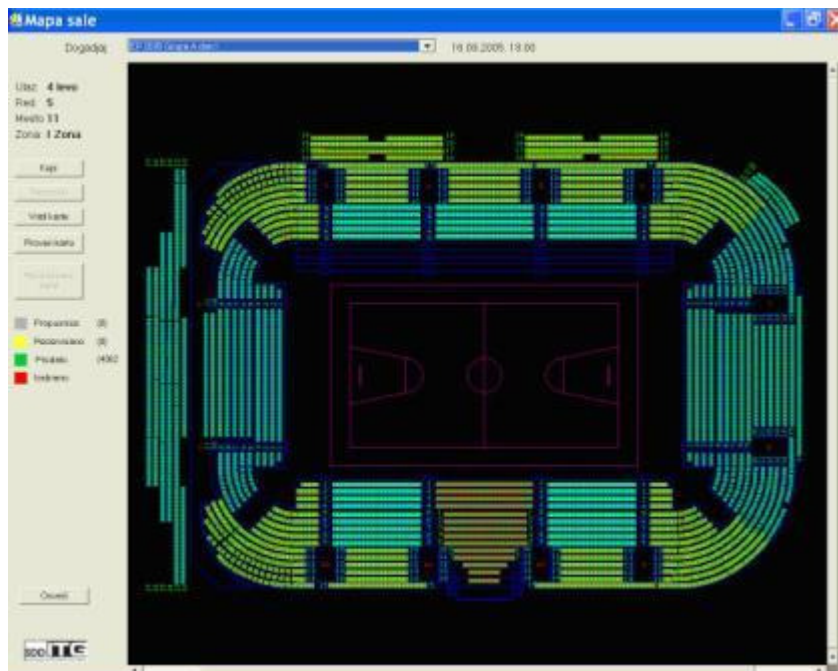
Which are the main aims of this system?

- Automated, simple and efficient booking and issuing of tickets for different events
- Automated and reliable access control into the object, supporting various visitor categories
- Possibility of defining an optimal tickets validity and sales policy (depending on the time period, number of entrances, type of sport events etc.)
- Maximum protection against potential abuse (unauthorized ticketing, unauthorized entrance, sale of fake tickets etc.)
- Elimination of the income losses caused by different malpractice
- Protection from vandalism
- Visitors and sales statistics
- Possibility of system upgrade by adding new functions

How the system works?

The system is based on the use of two types of tickets for sport events – paper tickets with bar code, which are issued as one-time (daily) ticket and season tickets, in the form of smart cards (plastic cards equipped with the RFID transponder – chip).

All entrances in the sport hall are equipped with the turnstiles ITG-0x (we can offer a range of different types depending on the size). The turnstiles carry bar code readers and smart card readers. They provide physical access control to the sport hall. RFID readers are specially produced electronic devices which can detect smart cards' chip or bar code and read data from it. The readers intermediate in ticket validity authentication. Each turnstile can be covered by the video camera. This way, system can provide video records of each authentication, stored in a data base, for later inspections. First, incoming sport events have to be registered in the application software ITG-TicketSales. The available number of seats and their position in the hall should also be defined. Booking and ticketing of seats is done simply by marking them on the graphic image of the hall (functions: zoom, single and group selection etc).



Daily tickets for one entrance are printed on the paper. Beside common data, each ticket contains its serial number. The printing of the tickets can be done before the sales begin, or tickets can be printed one by one at the moment of sale on the thermal printer. The bar codes of printed cards are entered into the system and they form the list of the cards available for sale. The sale clerk is responsible for the unsold

tickets in their total value. In the moment of sale, the sale clerk brings the ticket near the bar code reader installed on the counter. The reader identifies the ticket and marks it as sold, simultaneously decreasing the value clerk is responsible for. The system enters the ticket into the list of sold, but not used tickets.

The fact that all daily tickets must be recorded in the system as sold, before they could be used for entrance, protects the management of the sport hall from unauthorized ticket issuing and income collecting.

Sale, of the season tickets, is conducted through the ITG-Pass. Season ticket is multi-entrance ticket issued with specific validity. It is made of plastic, in the form of MIFARE® smart card. This kind of cards can be purchased on the market since they are standard products

(ISO 14443A). Before they can be used for entrance, these cards are to be personalized (by printing appropriate data on the cards) and entered into the data base. We can obtain and personalize cards for you.

Before the sales begin, the card is entered into the system by desktop card reader ITGpc-05. The card should be brought near the reader which is able to detect its ID number and place it in the list of valid season tickets ready to be sold. In the moment of sale, the ID number of the card will be placed in the list of the sold tickets ready to be used. When the season ticket expires and visitor pays appropriate value, the clerk can simply define the ticket as valid again.

Each ticket, both paper and plastic has its own unique identification number. ID number of the plastic card is written during its production process into the memory of its chip. This number is readable by all control devices, but fixed and invisible by bear eye. The season ticket is therefore impossible to be copied or counterfeited.

The entrance into the object is controlled by the tripod turnstiles (ITGbtt-0x) equipped with the RFID readers.

Visitors can pass into the object only by walking through the tripod turnstile one by one and with the valid ticket.

Thus, crowd on the entrance can not be abused for intrusion nor can the stuff let the visitors pass without the ticket.

We have developed special mobile turnstiles. Mobile barriers on wheels carry two turnstiles each. They are easily separated from the electronic and communication installations. In the case of emergency or when the crowd is leaving the object they can be removed, leaving more available exit space.



When the visitor arrives at the gate of the sport object, he/she should place his ticket (paper or plastic) in front of the reader on the tripod turnstile. Reader reads the ID number of the ticket. ITG-TicketControl software checks in the data base of the sold and unused tickets whether its ID number is written there. Based on the result, the software makes the decision and initiates the action: turning on the green light and

unlocking the turnstile or turning on the red light without turnstile unlocking.

If the ticket is valid, the turnstile will let the visitor pass. If visitor has a daily ticket, the system will mark it as used.

This way, the management of the sport object can be sure that one ticket will not be used by more than one visitor or more than one entrance. If someone tries to enter with used ticket, the turnstile will stay locked and the sound alarm will be activated. If visitor has a season ticket, the system records time, date and card ID number.

Thanks to the fact that the season ticket has its own memory which can be read and written by our devices, system can carry out various functions. For example, management of the sport object can define validity of the season ticket by time or number of entrances. When the card is detected by the reader the entrance counter installed in the card is reduced by one. When the entrance counter reduced to the zero, the card becomes invalid. Once bought, season ticket can be recycled by new payments until it is mechanically damaged.

System supports two more categories of smart cards – for employees and VIP visitors.

Smart cards for employees are entered into the system as season tickets with special right. They let the management control time attendance and access of the employees in the sport object. On the staff entrance, the RFID terminal that records time of arrival and departure of the employees is placed. This is the device ITGsr-05, with two external antennas.

If the sport object possesses separate VIP entrance, system will allow the passage only for the visitors with VIP season tickets. If the visitors with regular daily or season tickets try to pass on the VIP gate, the turnstile will remain locked and the system will trigger sound and visual signal of unauthorized entrance attempt.

The sport hall management can manage additional services offered to the visitors through our system. If the sport object contains sauna, fitness center, table tennis hall, pool hall etc. their operations can be managed by the software application ITG-Fitness. Visitors interested in using those services pay for this on the box office. The information of their payment is written down in their cards. Further on, visitors can attend additional services with their season ticket. In the same time, management team has the possibility of automatic implementation of the flexible policy which enables:

- Setting exact period during the day in a week when certain ticket is valid
- Setting the ticket's validity as a number of days (e.g. season ticket is valid for entrance in fitness club for 10 days)
- Setting the total number of entrances with season ticket, as well as daily limits

The entrance in Fitness Club is controlled with the tripod turnstile, identical to the one on the entrance to the sport object. In addition, thanks to the memory and chip they carry inside, smart cards (season tickets) can be used as a payment mean on the e-kiosks inside the sport object.

Simple and comprehensive reports deliver quality data for decision making.

System creates reports about passages and sales, by ticket type, sale clerk, clients, status and the number of the ticket. These reports provide information about number of booked, sold and used tickets, in total and partial, according to the defined criterion. These can be used for clerks' performances assessment, clients' preferences analyses etc.

Tripod turnstiles at the visitors gate, terminal at the VIP entrance and terminal on the entrance for staff as well as the work station for ticket personalization are all connected to the local computer network, which contains one server - data base host.

This system has been developed and installed for the first time in the Centar Millennium, Vršac, Serbia at the end of August 2005, for incoming European basketball championship

2005 and is still in regular use. The most up-to-date technology was introduced - the one which was implemented for the FIFA World Cup 2006 in Germany.

SDD ITG team has developed customized solution for swimming pools and implemented it in:

- Public swimming pool, Kragujevac, Serbia
- Villa Breg, Vršac, Serbia
- Sport center Banjica, Belgrade, Serbia
- Public swimming pool, Banja Luka, BiH
- Public swimming pool, Inđija, Serbia