

BIS

HOSPITAL INFORMATION SYSTEM

BIS is a complex modular information system designed for managing medical (clinical), administrative and financial aspects of hospitals. The purpose of BIS is to provide the best possible support for patient treatment and care, medical staff performance, administration and management through integrated computerized system. It can be applied in all kinds of hospitals, from the smaller specialised ones, to general and clinical hospitals and centres.

About the system

BIS automates hospital processes and connects medical data from various hospital sources into a single database. All you need is to enter the data once, and thus avoid duplication and repetition of information, as well as the possible delays and confusions caused by incomplete or lost data. Any change of medical or business data is instantaneously visible to all system users with the appropriate access rights.

BIS has been continuously developing and improving for more than 20 years in collaboration with doctors and nurses. It is used by over 20,000 end users in 35 hospitals in the Republic of Croatia, which covers 60% of the capacity of hospitals. BIS provides easy data entry and a quick and controlled access to data, which paper documents cannot ensure. The storage of sensitive medical information is safer with a controlled and transparent access, and maintenance costs are lower. The application of BIS enables automation of business processes within the institution, from the moment of patient's admission to their discharge, which enables a faster patient "flow", high-quality clinical data analysis and ultimately, better medical services. BIS also enables a reliable and safe management of hospital business transactions and a better control of expenditures and hospital resources.

BIS offers solutions such as: e-Karton, e-Vizita (e-Patient Rounds), e-Uputnica, e-Recept (e-Prescription), e-Dijeta and e-Njega (e-Care), to create short-term and long-term plans for further diagnostics and patient therapy. The characteristic of the system is its openness to other systems; it is possible to connect it with applications of other vendors through HL7 standard.

- **e-Karton** is an electronic health care record which contains all the medical documentation about a patient and an overview of the patient's medical history. In just a few clicks, doctors can examine patient's medical history at the same time: examinations, diagnoses, treatments and test results. Data access is controlled through authorization and an additional security measure is provided through a unique identification record number in order to reduce the likelihood of error (record mix-up).
- **e-Vizita** provides support for daily patient rounds and enables the recording of performed procedures in the ward, examination and test referrals, medication prescription, indicating the operation, ordering blood and blood tests, deciding on discharge and transfer.
- **e-Uputnica** enables an electronic ordering of tests, monitoring the realisation of given orderings and an automatic distribution of results.
- **e-Recept** enables an electronic management of medicinal therapy, that is, the creation of therapeutic list for an easier way of organisation and ordering of medications for the hospital pharmacy.
- **e-Dijeta** is an application for the creation of menus in accordance with the defined hospital diets, calculating all the nutritional elements, that is, controlling the limit values for a specific diet.
- **e-Njega** enables the monitoring of patient's health condition during his hospital treatment. Nurses have access to up-to-date information, according to which they assess the patient's condition, diagnose the problem and determine the necessary procedures of nursing care. Ultimately, this system provides a higher quality of health care.
- **Billing** is an application for invoicing and billing of hospital services. The application collects data from the treatment process, and depending on methods of payment and various price lists, converts them into invoices for the insurer in the case of basic and supplemental health insurance, directly for the patient or other partners.



What BIS gives to the hospital:

- Automation of business processes
- Elimination of paper-based communication between clinics/wards
- Control and monitoring of access to confidential information
- Support in business intelligence
- Cost reduction of diagnostics, food, printing, medications...

Technology

BIS application was created in Microsoft Visual Basic technology. During its further development, the added modules were created in Microsoft C# .NET Technology (Windows Forms). Crystal Reports framework, DevExpress XtraReports, XML-XSLT and Microsoft SQL Server Reporting Services (SSRS) were used for printing documents and reporting. All the components run on Microsoft SQL Server database.

References

- University Hospital Centre Zagreb (KBC Zagreb)
- KB Dubrava, KB Merkur
- General Hospitals: Pula, Slavonski Brod, Dubrovnik, Čakovec, Karlovac, Šibenik, Zabok, Bjelovar, Požega, Virovitica, Koprivnica, Ogulin, Nova Gradiška
- Children's Hospital, Zagreb
- University Hospital of Traumatology, Zagreb
- **Psychiatric hospitals:** Rab, Ugljan, Jankomir
- Psychiatric hospital for Children and Youth
- Special hospitals: Klenovnik, Novi Marof, Stubičke Toplice, Duga Resa, Sveta Katarina, Magdalena
- Health Resort Istarske Toplice

About the IN2 Group

IN2 is one of the leading software groups in Croatia and southeast Europe founded in 1992 in Zagreb. Today it employs over 400 IT experts and it operates in six countries of the region. The company deals with the development, implementation and maintenance of its own software solutions and services as well as the implementation of software applications of their partners. With their solutions and services, they cover the following areas of business: public sector, financial sector, health care, telecommunications and trade.

IN2 Group enters the health care sector in 2009 by the acquisition of Grad, the company from Pula, which specialized in hospital software, and by the acquisition of LabNet, the company from Osijek, it engages in laboratory software in 2011. Today IN2 Group is the market leader in the segment of hospital and laboratory information systems in Croatia. Its Hospital Information System (BIS) is implemented in 34 hospitals and BioNET LIS (Laboratory Information System) in 52 medical-biochemical laboratories, which makes about 60 percent of the capacity of hospitals in Croatia and 70 percent of the capacity of laboratories.

Further expansion of its portfolio in the area of health care, IN2 Group has accomplished through e-Health projects, e-Booking and e-Waiting List, for which it received two significant international awards: European IT & Software Excellence Award for the solution of the year in the public sector and a global award Microsoft Partner of the Year in the category Public Sector – Health.



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