

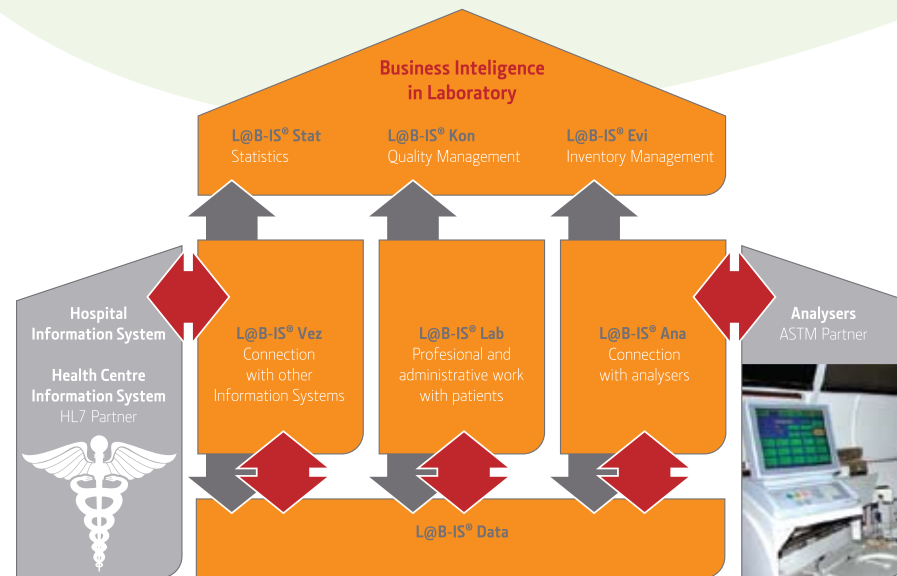
Laboratory Information System - L@B-IS®

In this day and age it is practically impossible to imagine working in healthcare without the use of modern information technology. This also holds true for medical diagnostic laboratories whose efficiency is greatly increased through process automation. It all started back in 1991 when the first laboratory information system was introduced under the name L@B IS®. At the time it was made as a text-terminal application running on the Ingres 4GL platform.

Today the company Fin-Pro is supplying medical laboratories with the third generation of the L@B-IS® information system, which provides support for all work processes across the pipeline, from expert lab work to final delivery of lab results. In order to accommodate the customers and adapt to their needs as much as possible, the system has a modular design. Each module includes a closed set of functionalities and can operate either as a stand-alone unit or as part of a complex system supporting lab operations.

As the modules are loosely coupled, different most suitable technologies can be used across the entire system. The Oracle Relational Database is used for data storage, and all modules with a visible user interface are designed as Win32 thick clients. The modules used for communicating with external systems are designed on the Sun Java Enterprise Edition platform and are presented outwards as standard web services. Messaging content is encoded using HL7 version 3 messaging standard. In the world and in Slovenia HL7 is the standard language used for communicating between information systems. The acronym HL7 is derived from the word "healthcare" and the highest (seventh) layer of the ISO/OSI reference model.

The central and most visible module composing the system is L@B IS® Lab. It supports all standard processes which employees carry out in a laboratory environment. In the administrative segment orders are received from hospital and other information systems



Picture 1.

(e.g. infonet's BIRPIS21-hospital information system) or are entered manually via the electronic referral slip, the currently active order and test status can be tracked, as well as the history of orders and tests. The last stage in the process is the printing of test results. The largest segment is dedicated to the work of lab technicians. This segment can be further divided into sub-segments (biochemistry, hematology, urine analysis etc.), and technicians use it to check and technically validate arriving results. The system furthermore allows control and management of automatic analyzers (blood and urine samples etc.) The section dedicated to heads of laboratories allows verification of results, greatly simplified with the historical overview of the patient's results. At the same

time the system allows tracking all events occurring in the information system.

Non-automated laboratories find that the most time-consuming are administrative tasks involved in manual copying results from analyzers performing sample analysis. The purpose of the L@B IS® Ana module is to integrate these devices into the information system and allow for automatic scheduling and delivery of test results. Currently over 130 drivers exist for different analyzers, a number growing each day. With this module and biologic sample vials labeled with barcodes working with analyzers is fully automatic and under normal circumstances human action is no longer needed for delivery of results.

Three business support modules exist to better support the management and operations of the laboratory: L@B-IS® Stat, L@B IS® Kon and L@B IS® Evi.

L@B-IS® Evi is a module which tracks consumption, ordering and shipping of laboratory supplies, especially the use of reagents for analyzers. This module provides an easy way to manage our purchasing procedures and track actual use of laboratory supplies. The module is also fully integrated with the central supplies warehouse and supports e-mail transactions with suppliers.

The L@B-IS® Stat module allows statistical analysis of the data collected across the information system. The module contains over 30 preset statistical overviews which can be displayed with a simple click. It also allows different quick graphic views of the results.

L@B-IS® Kon is a module helping laboratories control and maintain the necessary level of quality. The module allows internal quality controls in work procedures and allows

the user to monitor the analyzers' work. It also allows several different analyses of the analyzers' work, including the Westgard Rules, dual diagram, Yesterday-Today Method and frequency distribution chart. The module provides a central console allowing control over all analyzers connected via the L@B-IS® Ana module. If the laboratory uses the L@B-IS® Evi module, all data about the currently active reagent on the analyzer can be automatically acquired.

Currently the hottest module is the L@B-IS® Vez, which allows us to establish an electronic link between the laboratory and the hospital and other information systems. This enables electronic scheduling and delivery of test results to the referring doctor, where all the results are stored in the patient's electronic health records. Module supports all known healthcare information systems currently used in Slovenia. If a customer uses one of the Infonet information systems, the systems can share certain data (various registries), which greatly speeds up the implementation of the connection and its subsequent modification, since all data are entered only once. An

important new feature which we are offering on the market this year in collaboration with our partners Infonet, SRC and List, is the secure electronic exchange of lab data between private physicians and other healthcare institutions via the Internet, a solution called medGateway.

Significant experiences with linking laboratory analyzers via the L@B IS® Ana module have allowed us to create new connection possibilities. From now on it will be possible to link all other independent medical devices (spymeters, ergometers, ECGs, etc.) to existing information systems used in hospitals and community health centers. This will allow for central collection of all medical data between healthcare institutions.

Rok Zevnik

L@B-IS®
Laboratory Information System
for the automation and the overall managing of the processes
in medical laboratories

THE LEADING SYSTEM
OF THE SLOVENIAN
MEDICAL LABORATORIES

L@B-IS® is a verified, open solution that supports a holistic approach to the work carried out in a laboratory. Our development and support teams are oriented towards ensuring the highest quality and an undisturbed work ethic in our clients laboratories.

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