

## Navertica Hospital Information System Solution Concept

Navertica Hospital Information System (NaHIS) is a complex information system for healthcare facilities providing inpatient and/or outpatient care. It is designed especially for healthcare facilities that want to be economically efficient and to realize it, they need the appropriate tools.

Medical facilities providing inpatient and/or outpatient care (hereinafter also hospitals) are complex organisms. From a systemic point of view, hospitals are similar to other businesses and organizations of comparable size; the deep-rooted cliché that has been experienced about the uniqueness of healthcare facilities is not supported by objective evidence.

For every business management, information on process efficiency and cost and revenue is highly essential, all in summary as well as in detail. The same applies to hospital management. The information system must provide cost and benefit information for each department, for each patient, for each diagnosis, for each process, in real-time.

Application software packages typically used for business management in various sectors are as follows:

- ERP (Enterprise Resource Planning)
- CRM (Customer Relationship Management)
- BI (Business Intelligence)
- DMS (Document Management System).

NaHIS is proof that these standard applications can be successfully used in healthcare.

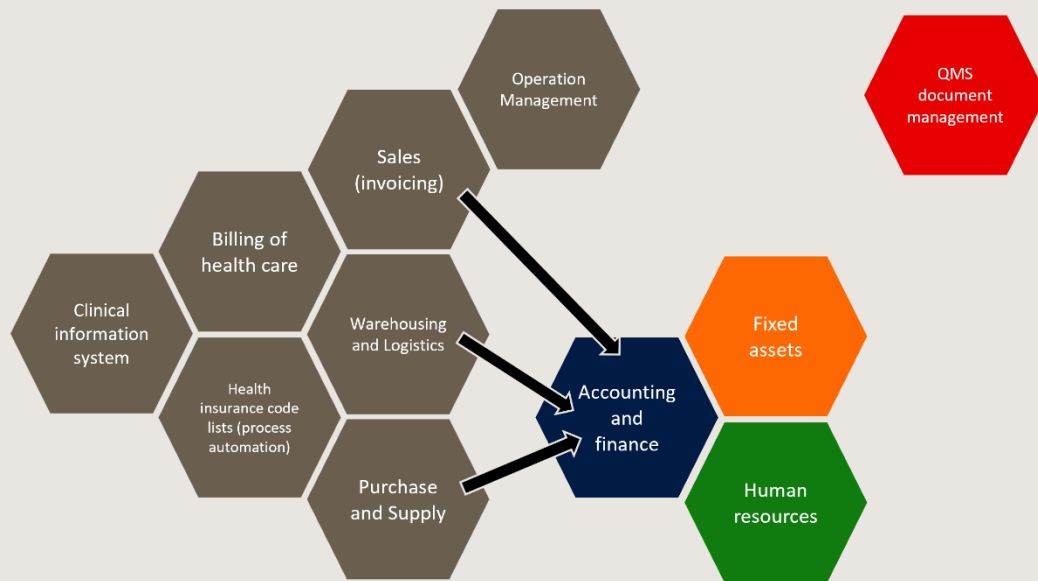


NaHIS is built on standard platforms for ERP, CRM, BI, and DMS, specifically on:

- Microsoft Dynamics NAV (or Business Central)
- Microsoft Dynamics CRM (or Power Apps)
- Microsoft Power BI
- Microsoft SharePoint
- The database used is Microsoft SQL Server.

NaHIS includes some other add-on modules for the healthcare environment built as an extension over standard platforms.

## Core information subsystems – the most common situation



The overall structure of the main information systems currently used in many healthcare facilities is shown in the figure. Brown color indicates those subsystems that are now commonly referred to as NaHIS (Hospital Information System), the blue color indicates the economic subsystem; other colors indicate other significant subsystems. The arrows indicate the direction of the information flow.

The central part and the core of this NaHIS is the processing of medical documentation in the Clinical Information System, evidence/reporting of medical treatment to health insurance companies and other subsystems. All different agendas of hospital facilities, especially economics and economic-technical services, are usually off-line linked to the core of this NaHIS.

The process of reporting the provided healthcare takes place in the Clinical System, where records of performed procedures are created for individual patients. Records of performed medical treatment are significantly inaccurate for the management accounting of the healthcare facility, as the medical treatment carried out in CEMU (Common Examination and Medical Units) are not charged to those cost centers that ordered the medical treatment, but to those centers that delivered the medical treatment based on an internal order. Into the accounting subsystem of the hospital, which is not part of the NaHIS, invoices for individual insurance companies are entered monthly, each with a de facto single aggregate number - monthly turnover for a related insurance company.

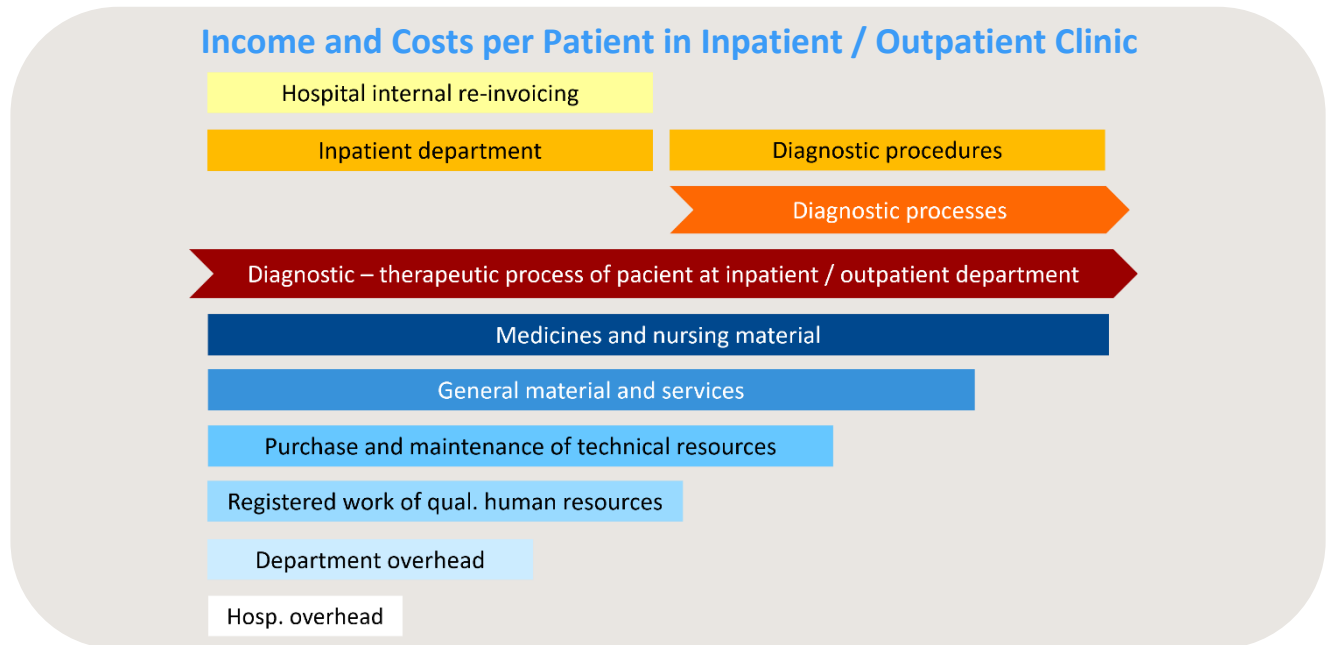
If it is necessary to issue an invoice to a self-payer (e.g., a foreigner), then the relevant invoice is handled by searching the records of performed procedures from individual departments of the hospital to look for the birth number (or other identification) of the patient - self-payer. The results obtained are then added to the invoice, which is issued to self-payers.

The biggest problem, however, is that the revenue per patient is kept in the NaHIS, while the costs are held in the economic subsystem, separate from the medical treatments, moreover only aggregated for the department. Thus, it is not possible to determine the benefits and costs of each particular patient, and not at all in real-time, to influence the ongoing diagnostic-therapeutic process.

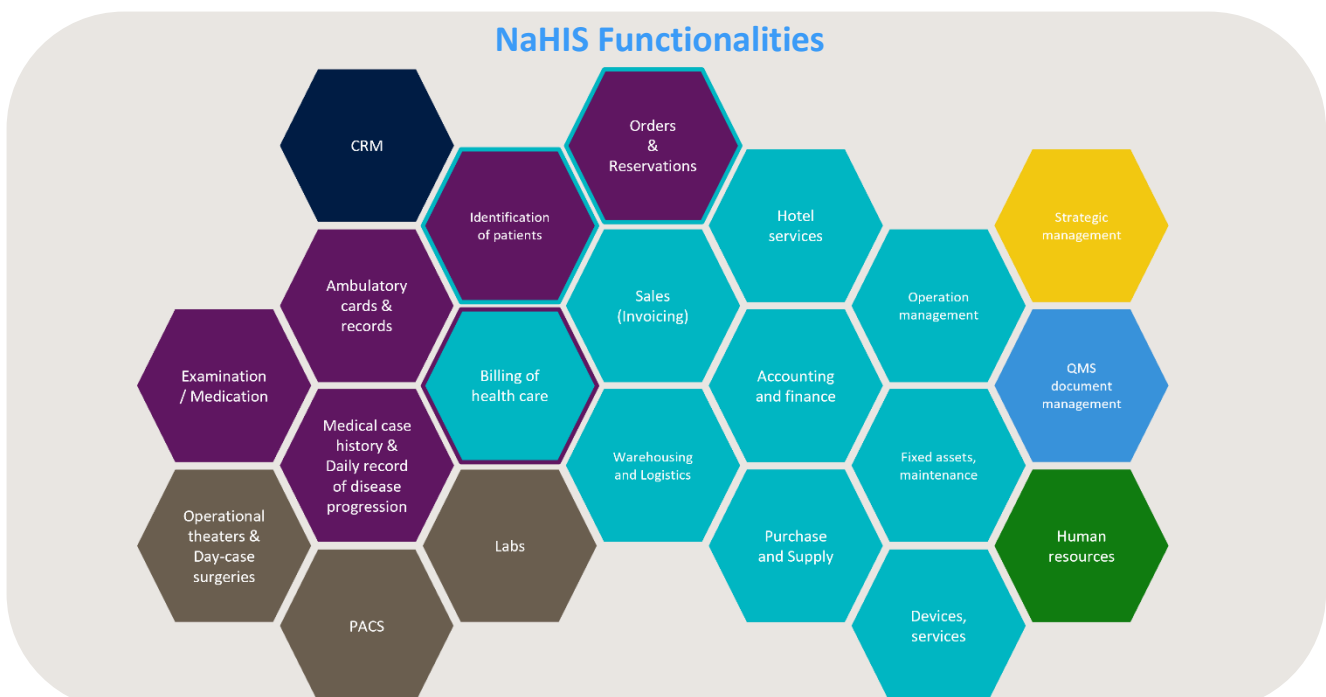
Also, the overall costs per department are debited with another error. It is the moment of posting of medicaments, medical material, and other materials into consumption. The departments and stations often do not keep official stock records (material and price), respectively, no stock locations for departments/stations are created. Therefore, medicines, medical and other materials are charged to the ordering station/department at the time of their dispatch from the central pharmacy/warehouse, even though they have not yet been consumed. There was only a transfer from the central register to a non-accountable handy-storage of the ordering department/station. Medicines and materials will thus get off the record.

## Change of information system concept

One of the main goals of NaHIS is to provide top and middle management of healthcare facilities with ongoing information on costs and benefits for specific individual patients. It makes it possible to influence in real-time the diagnostic-therapeutic process and, as a result, the overall management of medical facilities. The basic structure of costs and benefits per patient is shown in the following figure.

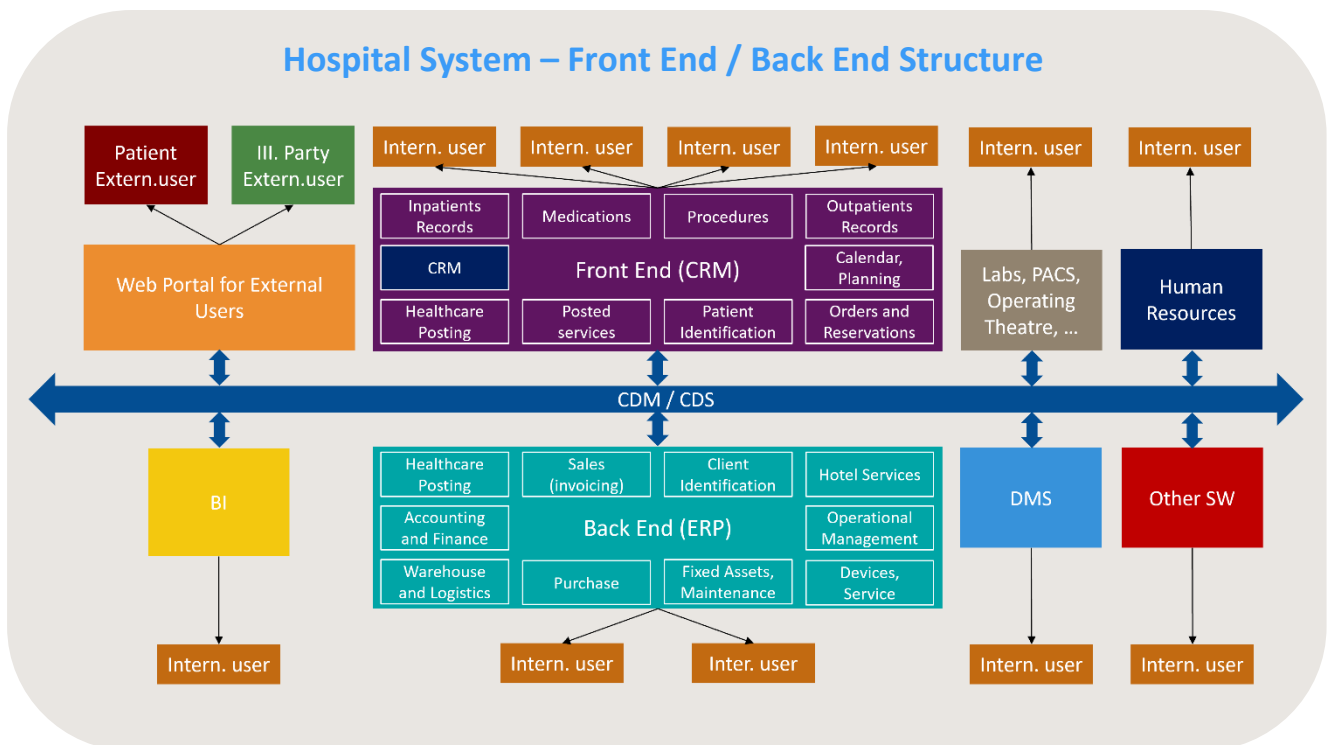


It is clear from the figure that all components of costs and revenues must be kept in one place, in one system, to be monitored and evaluated and to avoid manual processing. It cannot be achieved with the existing HIS either now or in the future, because it means designing the hospital system in a completely different way. And it also means not to develop all the required functionality from scratch, above an empty database, but to use as many as possible already established and worldwide application platforms. That is why we used the Microsoft Dynamics NAV / Business Central system in the ERP area, the Microsoft Dynamics CRM/Power Apps system in the CRM area and Microsoft SharePoint in the field of document management.



When using Microsoft CDM (Common Data Model) and/or CDS (Common Data Services) we get an open architecture into which we can integrate any other software application on platforms other than Microsoft. An important role is also played by the fact that the Microsoft CDM for healthcare is created according to the worldwide HL7 standard.

NaHIS also includes a web portal that allows external users access the hospital system according to the set profiles and access rights. In particular, external users are patients who can access on-line a certain part of their medical records, as well as to posted procedures and care costs. The external users may also be other medical facilities or the relevant government organizations.



## Details solutions

**Type of solution:** Complex information system (licenses and services)

**Product:** MS Dynamics NAV / Business Central, MS Dynamics CRM / Power Apps, and MS SharePoint

**Significance of Microsoft technologies:** Increase the productivity of Microsoft users solutions. The integrated vertical solution is represented by extensive functionality over the standard Microsoft application platform

**Industry classification:** health

**Customer size specification in the market segments considered:** Medium segment: 50-3000 employees,

**Supported language versions:** English, Czech

**Solution Price:** Contact the Pre-sales consultant

## NAVERTICA a.s.

Since 1990, we have been a provider of enterprise solutions based on Microsoft Dynamics 365, Dynamics NAV/AX, Business Central and Microsoft SharePoint. Our goal is not only to deliver the systems but primarily improvement of customer's profitability to get a better bottom line by using the provided solutions. We design, implement and support horizontal solutions for manufacturing, trading, project and service companies. We have completed complex deliveries in many European countries, South Africa and the USA.

Šumavská 15, 602 00 **Brno**, Czech Republic TEL +420 541 425 911 EMAIL [info@navertica.com](mailto:info@navertica.com)

Na Okraji 335/42, 162 00 **Praha 6**, Czech Republic TEL +420 541 425 911 EMAIL [paha@navertica.com](mailto:paha@navertica.com)

Bohrova 1, 851 01 **Bratislava**, Slovakia TEL +421 2 68 206 200 EMAIL [bratislava@navertica.com](mailto:bratislava@navertica.com)

29 11th Ave, Rivonia, 2128 **Sandton**, South Africa TEL +27 11 234 8833 EMAIL [sandton@navertica.com](mailto:sandton@navertica.com)