

System for managing service requests on the Helios platform

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Abstract

Efficient management of service requests, including scheduled maintenance and the repair of malfunctions, is a crucial aspect of after-sales support in numerous business organizations. The aim of this work is to optimize the management of such requests for companies using the Helios iNuvio ERP system as their enterprise information system. Via a web application, technical personnel are able to access company resources – including production materials and critical documents – while performing tasks on-site at the customer's location. As a result, previously used paper records are eliminated, processes become more efficient, and communication between company personnel and their customers is improved.

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1. Introduction

Many business organizations, particularly in the manufacturing and commercial sectors, routinely provide support to their customers even after the delivery of a product or a service. This after-sales care may include activities such as product installation, routine maintenance, or the repair of malfunctions [1].

Recording these activities in the enterprise information system is essential, as they are closely linked to financial, personnel and production processes and, if neglected, can lead to unnecessary administrative overhead [1, 2]. The solution is to grant access to company resources for personnel performing these tasks, enabling them to record their activities, illustrated in Figure 1, while addressing service requests. However, this introduces security risks, both in terms of network communication and maintaining data integrity, as well as the potential for mishandling critical information by individuals who do not routinely interact with the enterprise information system.

A number of commercial applications for the Helios iNuvio system (e.g., HAny¹) already exist. However, since these are proprietary applications, it is not possible to adequately evaluate their strengths and weaknesses. This work therefore focuses on the development of a system for a company specializing in custo-

mer-oriented solutions, which allows tailoring the application to the needs of each specific client.

This work presents a mobile application integrated with the Helios iNuvio system, providing secure access to company resources for field service technicians. It features token-based authentication, fine-grained user permissions, and a flexible configuration that accommodates specific client requirements. The mobile-optimized interface, combined with a maintainable architecture, ensures usability in the field while supporting future modifications for other customers.

2. Architecture

Figure 2 illustrates the architecture of the resulting system, including the method of integration with the **Helios iNuvio** information system. The key element is the existing database, which serves as the single source of truth regarding the status of company resources. Prior to the implementation of this system, company personnel access, create and modify these data exclusively through the Helios iNuvio client.

2.1 Data layer

The database itself also embodies the business logic of the system. Database procedures with defined parameters and result schemas serve as the interface between it and the upper layer of the system, represented by the application server providing access to the sto-

¹<https://www.redcon.cz/webove-aplikace/mobilni-servis/>

red data. This design allows the rest of the system to connect to a wide range of databases that comply with this interface. Furthermore, the method of working with the data can be easily modified, as it requires only changes to the implementation of these procedures.

The implementation of this data layer was carried out in collaboration with **iKomplet s.r.o.**, an implementation partner of the Helios iNuvio system, who provided essential guidance in developing the business logic.

2.2 Application layer

The primary role of the application server is to securely expose company data to the web client via a REST API. It is implemented in C# using the ASP .NET Core framework, which provides support for handling HTTP requests and accessing the database.

While authorization is managed in the database due to the need to administer users through the Helios system, user authentication is handled via a pair of JWT tokens sent in cookies, enabling session renewal without the need to re-enter credentials. During implementation, emphasis was also placed on protecting the system against potential web application attacks, such as XSS (*Cross-Site Scripting*) and CSRF (*Cross-Site Request Forgery*).

2.3 Presentation layer

The system client is represented by a web application implemented using the Vue.js framework. Since the application is primarily intended for field work, the user interface is optimized for mobile devices, while still being fully usable on desktop computers. The client interface can be customized using configurations obtained from the application server (which adjust system constraints when working with resources), client-side configurations (which handle preset values), or the application's own settings (such as language and color mode).

2.4 User roles and permissions

An important feature of the system is the ability to finely configure individual user access rights, reflecting their job role, experience, level of responsibility, and technical skills. During implementation, two predefined roles with different levels of permitted activities were established, and the ability to assign or revoke specific access rights for individual users was also created. This allows, for example, to restrict users from deleting existing records or performing legally binding actions, such as signing a service delivery report, a sample of which is shown in [Figure 4](#).

3. Results

Since the implementation of the Helios iNuvio information system for customers typically involves system modifications to accommodate the specific needs of their business and internal policies, the development of this system is also customer-oriented, tailored to the organization it is intended to serve. As part of my bachelor's thesis, the system was prepared for the Czech engineering company **Logsys a.s.** and subsequently tested with their service technicians. During development, regular consultations were held with iKomplet to ensure an adequate level of portability and to minimize future modifications for the needs of other customers.

[Figure 3](#) shows a key screen of the resulting mobile application, which is used to record the progress of a service call. This activity includes specifying the objective and subject of the task, logging work time, tracking available inventories, service technicians involved, consumed materials, and audiovisual documentation.

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References

- [1] Douglas M. Lambert. *Logistika*. Computer Press, Praha, 2000.
- [2] Jiří Janák. Issue tracking systems. Master's thesis, Masarykova Univerzita, Fakulta informatiky, Brno, 2009.