

Development of an Automated Reporting of Disused Sealed Source Movement System (RAM-FSD for its acronym in Spanish)

RAM-FSD is a initiative of the Cendit Foundation to contribute to the improvement of national strategies for moving disused sealed radioactive sources. This project seeks reinforce the generation and management of reports on the transportation of disused radioactive material in the country, but also represents a step in digital transformation by promoting platforms developed using free software and open standards, aligning with the modernization and efficiency tech of the venezuelan State.

Currently the manual method for generating reports on moving is obsolete radioactive material, It is slow and prone to significant human error, compromising data integrity, traceability, and regulatory compliance. The absence of a centralized system increases these difficulties. The RAM-FSD system addresses these challenges through a web-based application that automates and standardizes report generation, improving efficiency and data quality.

The system's development was based on an iterative and incremental methodology, enabling the delivery of features in short cycles, early feedback, and easy adaptation to changes. Initial planning was based on "use case diagrams" to define the functional requirements.

Methodology and Development:

The system was developed using an iterative and incremental methodology, using use case diagrams for functional planning. Its architecture was base on the Model-View-Controller (MVC) pattern with the PHP CodeIgniter 4 framework, which allowed for modular and organized development.

Templates: These manage interaction with the database. A notable feature is that the data from a completed report is copied to the _finalized tables to preserve its integrity against future modifications.

Views: 24 responsive views were created using Bootstrap 5.3.3 and DataTables.js for user-friendly and efficient data management. The use of modals improves the user experience when managing forms.

Controllers: Seven main controllers handle client requests, ranging from authentication (Login.php) to transfer management (Transfer.php) and a recycle bin (Trash.php).

Innovative features.

- User Management: The system assigns specific permissions to control access to different views and features.
- CRUD Modules: Comprehensive functionality has been implemented to Create, Read, Update, and Delete (CRUD) key entities such as institutions, personnel, vehicles, and others.
- Recycle Bin Function: Records are not permanently deleted, but rather marked as inactive, with the option to restore or permanently delete them from a specific controller.
- PDF Report Generation: Before generating a PDF report, the system validates that all required fields are complete and marks the transfer as "complete" to prevent alterations.
- Configurable Numeric Control: Allows you to customize the format of the report control number, defining the date order, numbering, and an acronym.

The RAM-FSD project successfully culminated in a robust web application that automates the generation of reports for the transportation of radioactive material. The implementation of validated forms and a relational database has significantly increased the reliability and accuracy of the information. Beyond optimizing document management, this system is a clear example of digital transformation applied to a strategic and highly sensitive sector in Venezuela. It represents a tangible advance toward the modernization of public administration, contributing to more efficient and secure management of critical processes and strengthening the country's technological sovereignty.

References:

- General safety requirements GSR. Part 3 - IAEA.
- General safety requirements GSR. Part 5 - IAEA.

Country or International Organization

Instructions

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Track Classification: Track 3 Safety and Security during Transport Operations