

Environmental Monitoring Mobile Law Enforcement System Design

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Abstract. Environmental monitoring mobile law enforcement system is based on the environmental protection e-government, using space grid technology, geocoding technology; apply mobile information technology to environmental management. Through the construction of front-end mobile law enforcement terminal system and back-stage support system, promote the environmental management to achieve the goal of active, accurate, rapid and unified, so as to truly integrate and optimize environmental management information resources and all levels databases of environmental protection departments, and establish an environmental management system which covering the whole space and the whole region.

1. Introduction

In 2012, the Ministry of Environmental Protection clearly identified the construction of environmental monitoring mobile law enforcement system as one of the main support projects for the 2012 special fund for emission reduction. The construction work of the pilots consist of a total of 24 provinces (municipalities, districts), as well as some related cities and districts has been basically completed after three years. And the procedure, standardization, normalization and management mode of the environmental monitoring business has been initially formed. The effectiveness of on-site law enforcement also has been comprehensively improved. In response to the national requirements and improve the ability of the region to improve environmental monitoring, our office will build an environmental monitoring mobile law enforcement system, generate a network of environmental monitoring to comprehensively enhance nation's environmental monitoring and monitoring capabilities, and improve the standardization and gridding intelligence of environmental monitoring and monitoring.

2. Key requirements

(1) Standardization

The environmental monitoring mobile law enforcement system not only meets the basic requirements of the Ministry of Environmental Protection, such as “task management, on-site law enforcement, assessment management, and information inquiry”, but also has functions such as navigation and offline caching. The standards followed by the environmental monitoring mobile law enforcement system include those environmental protection standards issued by the Ministry of Environmental Protection, such as national environmental standards, including pollutant emission standards for coking chemical industry, steel sinter, industrial air pollutant emission standards, air pollutant emission standards for iron and steel industry, environmental noise emission standards for construction site boundaries, water pollutants for wool textile industry, silk water industrial pollutant emission standards, textile dyeing and finishing industry water pollutant emission

standards, steel industry water pollutant emission standards, solid waste environmental standards catalogue, and technical requirements of nuclear power plant radioactive liquid effluent emission.

The environmental monitoring mobile law enforcement system will provide efficient and reliable information technology support for the construction of an environmental law enforcement monitoring system with clear rights and responsibilities, standardized behavior, strong monitoring and efficient operation, and realize the informationization and scientificization of environmental management.

(2) Enforcement

Formulate rules and regulations through standardized design, strengthen the assessment mechanism, systematize, formalize, normalize, procedure, standardize, specialize, and digitize the law enforcement procedure and law enforcement content, clarify behavioral norms, and solve environmental management problems of no written references, laws and regulations, non-discipline, non-compliance, lack of coordination, buckpassing to achieve the standardization of law enforcement procedures and law enforcement content.

(3) Task grid

Utilizing the "grid" monitoring concept and mode, combining with the advanced computer technology and spatial digital technology such as GIS, by dividing the whole area into grids of different levels, clarify the work at all levels. Through the mobile law enforcement system to realize the transformation of environmental management from qualitative to quantitative, and forms a grid-wide full coverage system for environmental monitoring and law enforcement. Adopting the methods of "fixing personnel, fixing the location, fixing standards, fixing frequency, and fixing responsibility" to clarify the scope, content and responsibilities of environmental monitoring personnel, and form an environmental monitoring grid that covers the key polluting enterprises in the whole region from horizontal to vertical to enhance the level of refinement of environmental monitoring and enforcement.

(4) Intelligent management

Establish pollution source accounts. Taking pollution sources as clues to cover environmental monitoring business process management, achieve unified integration of environmental law enforcement related information and processes, meet the requirements for the allocation, monitoring and evaluation of law enforcement tasks, and conduct trace management of law enforcement processes. Geographical information technology is used to realize the visual display and query of grid and pollution sources. Establish a grid responsibility management system to provide maintenance and management tools. Realize unified management of on-site law enforcement information, and provide functions such as query, statistics, and analysis.

3. System construction

Under the guidance of the overall environmental information planning, the overall framework of the environmental monitoring mobile law enforcement system is based on the requirements of environmental monitoring law enforcement application framework, business framework and data framework, combined with current mainstream and advanced technical methods and means. The overall architecture of the system is as figure 1.

(1) Front-end mobile law enforcement system

The mobile law enforcement terminal system is mainly deployed in the mobile law enforcement terminal based on Android operating system. Combined with the design characteristics of mobile APP application, the design and development of the mobile terminal system not only satisfies the requirements of law enforcement work, but also fully company with the characteristics of current

mobile APP application.

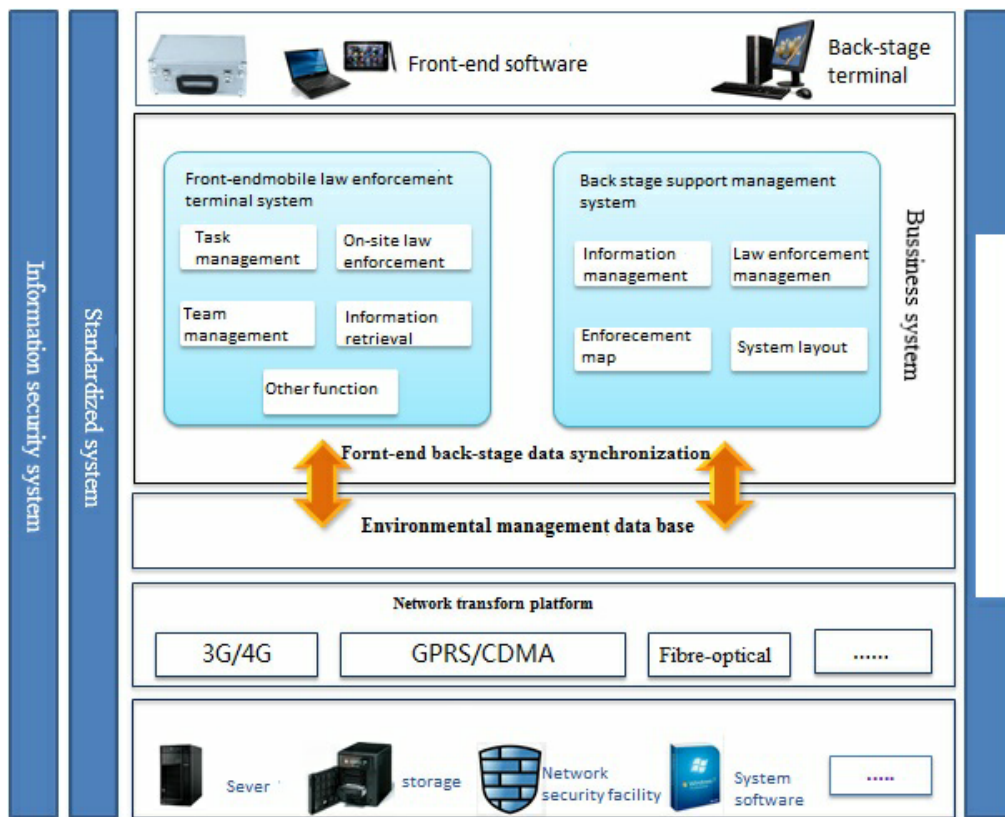


Figure 1 The overall architecture of the system

Mobile law enforcement terminal system functions include task management, on-site enforcement, information retrieval, and other functions.

1) On-site law enforcement

Using intelligent terminals to achieve on-site law enforcement of environmental mobile law enforcement suspension and generates a variety of law enforcement functions, including transcripts, law enforcement forensics, etc., and can check law enforcement accounts.

2) Team management

Through the team management function, the users within the scope of authority can check the team's law enforcement situation, individual law enforcement trace, and specific team file information on the mobile terminal to master the overall work of environmental monitoring.

3) Information retrieval

The information retrieval function is designed for users to query and understand the situation of a certain enterprise or the law enforcement situation in the task processing process, including the functions of finding enterprises, enterprise navigation, law enforcement trace, online monitoring, and environmental handbook.

4) Task management

Using mobile terminals to manage environmental monitoring tasks, including handling tasks, viewing tasks already performed, providing pre-warning radars, etc.. And managers can assign tasks on mobile terminals.

(2) Back-stage support management system

The design of back-stage support platform is based on the B/S framework, interconnecting with intelligent law enforcement terminals and portable computers to support its design functions. And provides auxiliary support for the preparation before law enforcement inspections, the invocation

and collection of information in law enforcement inspections, and the analysis and summary of information after law enforcement inspections. Back-stage business management support software development will ensure the security and confidentiality of environmental law enforcement related data.

The functions mainly include information management, law enforcement management, law enforcement map, and system configuration.

1) Backstage homepage

The functional modules of the back-stage support management system are displayed in the form of sudoku, and the functional modules are combined and displayed according to the information management and law enforcement management dimensions, so that the functions are gathered and convenient for daily use. And can provide a variety of styles to change the theme.

2) Information Management

Realize the management of information related to the mobile law enforcement system. Direct at pollution source information, law enforcement task information, user related information, and reference information provide the functions with one source one file, one case one file, one team one file, environmental handbook, and information maintenance.

3) Law enforcement management

Realize the procedure management of law enforcement tasks and the management of related issues involved in the law enforcement process. Functions include task management, law enforcement expressions, law enforcement statistics, and form management.

4) Law enforcement map

Law enforcement map refers to GIS maps that can provide geographic information support for on-site law enforcement terminals and superimposing spatial data and business data to provide spatial visualization of various law enforcement data. Including pollution source distribution, law enforcement situation, grid management and command and dispatch.

4. Conclusion

Starting from the environmental impact assessment of construction projects, the environmental monitoring mobile law enforcement system going through the sewage permit, sewage declaration fee, environmental petition, environmental monitoring, administrative punishment, pollution source monitoring to the de-registration of enterprise is the complete process of a pollution source from “birth” to “death”. The pollution source lifecycle management system integrates all the resulting data of a pollution source from “birth” to “death”, and establishes a separate file for each source. A large number of solid data collection in the back stage provide rich data support for on-site suspension, timely and comprehensive understanding of the enterprise, precise control of corporate dynamics, and improved regulatory refinement capabilities.

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