Mine rescue and command system based on panorama technology and two–three dimensional linkage

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1. Construction background

2. The main function

3. The basic structure

4. The key technology

5. Results show
1. Construction background

Frequent accidents in coal mine

Secondary accidents
Definition of mine emergency rescue command system,

Based on mine safety science and technology, supported by information technology, the combination of software and hardware mine emergency guarantee system is a tool for implementing emergency rescue preplan; With daily emergency management, venture analysis, monitoring and controlling, forecasting and early warning, dynamic decision, comprehensive coordination, emergency linkage, simulation drilling, information sharing and exchange with overall evaluation function etc could be generated command program dynamically, rescue program and support scheme etc.
The problems existing in the emergency rescue command system

(1) System is imperfect, emergency rescue command management is confused.

Measure: To strengthen the construction of “one case SanZhi”——
To improve the emergency response plan; In order to strengthen the management of classification, graded responsibility, integration of departments and regions at different levels, territory of the emergency management system; To strengthen the legal construction of the mine emergency management system; To create a unified command, complete functions, responsive, efficient operation of emergency response mechanism.
1. Construction background

(2) Do not have a unified standard, all levels of the platform are not implement networked and interconnection.

(3) Information is not compatible, existing the phenomenon of information island, It should be strengthened with the construction of emergency “picture”.

(4) Function is not perfect, lacking auxiliary decision-making function.

(5) Technology is not advanced, Information technology application is lag behind, It couldn’t realize the streamline, automation and visualization.

(6) Plan is not applicable, Interoperability is not strong, Update is lag.
China is one of the most serious mine accident country in the world, Coal mine safety problem has not been fundamentally solved with serious accidents occur frequently which causes serious casualties and huge property losses. The mine emergency rescue is the last line of security of production, In order to reduce accident loss, improving the ability of rescue information acquisition, quick response, organize and coordinate, decision-making of command. According to the business process of mine rescue and the optimization of the mine emergency rescue system, based on C/S + B/S architecture, applying Web GIS, 3D and the technology of panorama,
2. The main function

constructing the integrated mine emergency information management platform which mainly includes mine rescue team business systems, emergency rescue command system, emergency simulation rescue system and safety production dispatch management system. The mine rescue and command system achieves the digitization of the management of mine rescue plan, and flow, automation, visualization of the rescue and command. The system Implements two and three information linkage function of the rescue command with which provides a digital management tools and auxiliary decision-making method for scientific methods of mine rescue.
### The main function

**system function**

1. Information management combined with GIS platform, realizing the monitoring visualization of important job site; Visual display of emergency resources distribution; Visual demonstration of line personnel to avoid disaster and rescue route.

2. Implement the monitoring of the emergency resource information in the daily unattended process, could view the mine all kinds of monitoring information at any time, realizing the hazard warning and could make a quick response when an accident or plans happens.

3. Implement the rescue command scheduling two-three dimensional visualization, on-site rescue resources informatization.
2. The main function

(4) System through the establishment of emergency knowledge base, realizing emergency theoretical knowledge evaluation, emergency simulation evaluation, raising the level of rescuers theoretical knowledge.

(5) Through the establishment of the rescue vehicle positioning system, realizing the dispatching management of the rescue vehicle, to ensure the command and scheduling of vehicle during emergency rescue.
2. The main function

(6) By integrating the rescue unit of video monitoring system, breaking the limitation of the video installation unit and the place, it could be queried by classified management.

(7) An application for hand-held terminal with talkback function, building a network of emergency rescue in the mine. Meet the ambulance team daily management and the demand of the emergency information release.
3. The basic structure
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Functional module structure
4. The key technology

1. GIS
2. Graphic plotting technology

4. The key technology
4. The key technology

3. Web GIS
4. The key technology

Digital map, GPS, BEIDOU positioning technology
4. The key technology

5. panorama technology
6. **3D GIS technology**

Based on C/S + B/S structure of 3 DGIS platform shows the mine 3D form, simulate full three-dimensional, the modernization of the mine.
4. The key technology

7. Web development technology

- ASP.NET MVC4
- Dynamic chart technology
- Entity Framework 5.0
- Ajax technology
- WebOffice technology
- EasyUI technology
4. The key technology

8. System integration technique
5. Results show

The login interface of the system

platform

登录管理系统

账号：
密码：
登录
Results show
5. Results show

System platform home page
5. Results show
5. Results show

GIS map of emergency relief supplies distribution
5. Results show

Mine 3D visualization
Emergency duty
5. Results show

Emergency response
The current accident information
Results show

Information collection and feedback
5. Results show

Emergency rescue cases
Integrated Communications——Send SMS
5. Results show Emergency rescue vehicle positioning
5. Results show
Exercise process
5. Results show

Safety monitoring system integration
5. Results show personnel positioning system integration.
5. Results show

Video monitoring and controlling system integration
THANK YOU FOR YOUR ATTENTION!