

Application of smart platform in China's ecological restoration project

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Abstract

In the context of the sustainable development strategy, in order to better implement my country's ecological restoration projects, integrating modern technology concepts to build a smart platform and implementing digital management construction work will help improve the decision-making level and management efficiency of ecological restoration. Therefore, on the basis of understanding the smart platform and its framework, this article analyzes its construction ideas and application countermeasures based on the implementation of China's ecological restoration projects.

Keywords

Smart platform; China; Ecological restoration; Planning; Project design; Perception layer; Network layer; Data layer.

1. Smart platform and its framework

In essence, a smart platform is to build a digital supervision platform, which can not only meet the needs of large-scale business development, but also better respond to the new challenges brought about by the substantial growth of data. Therefore, on the basis of promoting the construction of ecological restoration projects in China, the existing system standards should be regarded as basic guarantees.^[1-4]Based on the understanding of natural resources and network advantages, a combination of multiple functional modules should be constructed in accordance with the development and construction requirements of provinces, cities and counties Smart platform.

2. Ideas for building a smart platform

According to the analysis of the "Opinions on Accelerating the Construction of Ecological Civilization" proposed by my country's construction and development, in order to improve the implementation effect of my country's ecological restoration projects and enhance the efficiency of practical management, it is necessary to build a smart platform based on practical work needs. The specific directions are divided into the following Points: First, comprehensively integrate ecological issues to assess system health. According to the results of natural resources survey and analysis in previous years, it can be seen that ecological function areas and sensitive and fragile areas are regarded as the most difficult points of supervision.^[5]Through dynamic monitoring of farmland, grassland, forest and other areas, their spatial pattern and ecological structure are regularly studied and judged. Whether they are in an ecologically stable state of growth, so as to accurately grasp the main influencing factors that cause soil erosion and desertification, and ultimately provide an effective basis for the implementation of ecological restoration projects. Second, promote various businesses in strict accordance with the restoration goals. On the one hand, it is necessary to build a complete database based on the contents of the national ecological restoration plan, which contains expert research results and construction models, which can provide accurate judgments for the

actual optimization of the ecosystem; on the other hand, it is necessary to use modern technology concepts such as integrated 3S and workflow to provide services for ecological restoration of rivers, lakes, grass, forests and trees, and assist department employees in carrying out review, supervision, and acceptance assessment to ensure that the overall ecological restoration project can be promoted in strict accordance with the principle of "who benefits, who compensates".^[6] For example, cloud computing is the main operation mode and service mode for future project promotion. The comparison results of the characteristics of the four data center network reference modes it owns are shown in the following table1;

Table 1. Comparative Analysis of Network Application Patterns

Operation mode	Operation mode	Operation mode	Operation mode
Resource usage	Resource usage	Resource usage	Resource usage
Expenditure	Expenditure	Expenditure	Expenditure
Resource utilization	Resource utilization	Resource utilization	Resource utilization
Autonomous building and operation			

Third, take demand as a guide to implement business coordination and sharing. Combined with the comparison and analysis of the above table, we can see that cloud computing-based resource sharing and use is an inevitable choice for the promotion of future ecological restoration projects. The reason is that China's ecological restoration not only needs to rectify the function of the ecosystem, improve the level of product supply, but also achieve natural value-added and creative More natural capital. Therefore, based on cloud computing to strengthen the network application layer of the smart platform, it can push updated data for each platform in real time, which helps employees of various departments to implement scientific rectification projects based on data changes in different periods.^[7-8]

3. Strategies for applying smart platforms in China's ecological restoration projects

3.1. Strengthen the analysis of auxiliary decision

First, planning and design. Build a smart platform in China's ecological restoration projects. By comparing and studying the natural environment and economic changes in different regions, neural algorithms and other methods can be selected according to basic concepts such as the ecosystem service framework to clarify their problems during operation. At the same time, it can also build a corresponding database in combination with partitions, so that practical management work can start with scientific planning and arrange the required professional talents.^[9-10]

Second, project design. In essence, China's ecological restoration projects must be implemented in practical development, and they are the basic carrier for optimizing the ecosystem and improving ecological problems. To deal with ecological issues in a comprehensive manner, the most important thing is to ensure the scientificity and practicability of the system's operational functions, which will help improve the system's service level and meet the expected construction and development goals. Therefore, based on the smart platform, the existing natural resources are clearly and dynamically monitored, and the ecological composition and function distribution are scientifically divided in strict accordance with the models and methods of ecological theory, and the main factors affecting ecological stability are studied, so as to provide a basis for the implementation of departmental design work. At the same time, it is necessary to combine digital technology to build a three-dimensional visual design

environment, which will help comprehensively measure and analyze natural resources with complex geographic conditions.

Third, protect compensation. Nowadays, the most common ecosystem assessments are mainly divided into four types: first, supply; second, regulation; third, culture; fourth, support. As the ecosystem and its services are different, the service value estimation methods are also different. At this time, designing analysis modules and estimation modules inside the smart platform can help department employees fully grasp the ecosystem service value and correctly judge system services The selected path.

3.2. Auxiliary project management

On the one hand, project review and supervision. Use 3D visualization technology to compare the results of research and planning, calculate the correctness of the proofreading project budget, and select passive or active monitoring methods to monitor the specific conditions of project construction, which helps department employees to make qualitative evaluations based on the project construction at different stages . At this time, in order to ensure the completeness and authenticity of online monitoring, most of the active monitoring methods of smart platforms choose remote sensing technology, which can ensure that the department can obtain the latest remote sensing images in time; on the other hand, project acceptance and evaluation. Through the selection of quantitative and qualitative evaluation methods on the smart platform, carefully review the project data, and judge the regional ecological improvement based on field inspections.

4. Conclusion

In summary, based on the analysis of the implementation of China's ecological restoration projects in recent years, the construction and promotion of a smart platform is an important way to obtain and improve natural resources, and it has a positive effect on ensuring the stable operation of the ecosystem. Therefore, in the future construction and development, my country must strengthen the research and construction of the intelligent platform for ecological restoration projects, in order to obtain more valuable data information.

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